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Abstract

In this thesis digital wellness services (DWSs) are in focus. The DWSs are services provided through digital devices, such as smartphones, bracelets, and tablets, by using digital environments such as Internet, cloud services, and websites. They can provide users with information that has an impact on their wellness, such as pulse, nutrition, and training guidance. The focus for this work on DWSs is on the age group of young elderly (60 – 75 years old). They belong to a group who were born long before digital devices and environments emerged and this factor may affect their motivation and willingness to use and benefit from DWSs.

This thesis offers a framework for a digital servicescape that enables young elderly to benefit from DWSs. DWSs are produced and offered in digital servicescapes, where the interaction between the service providers and the service users occurs. The interaction can take place in different spaces like fitness studios, shopping malls or banks. DWSs for large groups of young elderly will require an ecosystem of stakeholders to develop, distribute, maintain, support, and further develop these services. An ecosystem builds on policies, strategies, processes, information, technologies, applications and stakeholders, and includes people who build, sell, manage and use the system. In order to understand the ecosystem, it is necessary to have a holistic approach to work out how its context, technology, stakeholders, and use interact with each other. A digital servicescape offers the conceptual basis for the ecosystem to form, evolve, and survive and produces platforms on which it is easy, effective, and productive to access and use DWSs.

The described interaction between digital servicescape and DWSs for improved health leads to the research question: *How can a digital servicescape enhance young elderly's use of Digital Wellness Services (DWSs)?*

In order to answer the research question, the thesis presents different approaches that influence the young elderly's capabilities and willingness to use and benefit from DWSs. If the young elderly follow recommendations to apply DWSs they will benefit in terms of healthier aging, reduced ill health, and a better quality of life. For developers and providers of DWSs development work will open up business opportunities if they understand the needs and demands of the young elderly. In addition, DWSs can contribute to significant health, social, and economic benefits for society in general. Proactive wellness programs for young elderly will have cumulative effects on the conditions for good health. The digital servicescape is a conceptual framework for future work on actually building the necessary platforms for DWSs.

The work on this thesis follows an explorative approach. The data collection was carried out through surveys, literature review, and focus groups after which the data was sorted, analysed and interpreted. As the

work progressed, a need arose to obtain insights from additional perspectives with the consequence that the additional data contributed to a deeper knowledge of the young elderly, DWSs and digital servicescape.

The young elderly are, as a group, a very large market consisting of almost 100 million people in Europe alone. For the young elderly, digitalisation has been a part of their lives and its development has provided them with new opportunities to communicate. To them the interface on their digital device is where the interaction with a service provider occurs. Behind the interface, a digital servicescape and an ecosystem provide the necessary tools for the young elderly to achieve the wellness they seek. Nevertheless, to understand the target group it is important to consider four wellness dimensions: i) physical wellness, ii) social wellness, iii) emotional wellness, and iv) intellectual wellness. Together, the four dimensions form a holistic wellness approach to motivate young elderly to use DWSs. The research results show that the young elderly need to be motivated to adopt the services offered. Motivation that affects the young elderly is both intrinsic and extrinsic and this should be considered when developing and providing DWSs and digital servicescapes. Therefore, the service providers have to meet the expectations, needs, and demands of the young elderly and develop services that are suited for the target group. However, this is not enough, as this research shows that the young elderly want to be in a context where they feel safe.

Information systems offer a basis for communication and interaction with and through digital devices such as smartphones, tablets, and bracelets. The Internet constitutes a platform for service and social interaction. Services offered on the Web, make it possible to do shopping, be entertained, entertain, and be involved in education, research, business and much more. The internet forms an important part of the infrastructure for DWSs and digital servicescapes.

An efficient and well-designed DWS and its servicescape can create a win-win-win situation. The first part is the young elderly who can benefit from DWSs by increasing their chances of a longer, healthier, and happier life and thereby achieve wellness. The second win situation concerns the service developers and providers who can build a business by designing well-working DWSs aimed at the young elderly. Finally, the third win situation is about family, friends, and society. Well-designed DWSs can be beneficial for family and friends to help the young elderly to achieve wellness and require less support from family and friends. For society in general, there are financial benefits, as healthier and happier young elderly will reduce the demand for health care and support. Together the three win-win-win scenarios build an opportunity for a better tomorrow for all concerned.

This thesis has created a foundation for continued research, testing, and development of DWSs and digital servicescapes. It has shown that there is a need for deeper understanding of the benefits a well-designed servicescape for DWSs can bring to people in general and to the group of young elderly in particular. Furthermore, there is a need for further research in the win-win-win situations when young elderly get access to digital wellness devices. A particularly interesting avenue of research would be to investigate how that digital servicescape could be designed and whether society should provide devices free of charge, at discount or with some other business model.

Sammanfattning

I denna avhandling är digitala wellnesstjänster (digital wellness services, i fortsättningen förkortat DWS[1]) i fokus. DWS är tjänster som tillhandahålls i digitala miljöer såsom internet, molntjänster och webbplatser, via digitala enheter, såsom smartphones, aktivitetsarmband och surfplattor. De kan hjälpa användaren med information som påverkar användarens välbefinnande, som till exempel puls, närings- och träningsråd.

Fokus för arbetet ligger på åldersgruppen yngre äldre (60–75 år). De tillhör en grupp som föddes långt innan digitala enheter- och miljöer växte fram, vilket kan påverka deras motivation och vilja att använda och dra nytta av DWS.

Avhandlingen söker formulera ett ramverk för digitala servicelandskap för att göra det möjligt för yngre äldre att dra nytta av DWS. Samspelet mellan tjänsteleverantörerna och DWS användarna sker i digitala servicelandskap, i olika miljöer som till exempel gym, köpcentrum eller banker. DWS kräver ett ekosystem av intressenter för att utveckla, distribuera, underhålla, stödja och vidareutveckla tjänsterna. Ett ekosystem består av policyer, strategier, processer, information, teknik, applikationer och intressenter och inkluderar personer som bygger, säljer, hanterar och använder systemet.

För att förstå ett ekosystem är det nödvändigt att ha en helhetssyn om hur dess kontext, teknik, intressenter samt användning och resultat interagerar med varandra. Ett servicelandskap erbjuder den konceptuella grunden för att ekosystemet bildas, utvecklas och överlever. Digitala servicelandskap erbjuder plattformar där det ska vara enkelt, effektivt och produktivt att komma i åtnjutande av DWS, utveckla och förbättra användningen av dem samt att fortsätta användningen av tjänsterna i tillräcklig grad för att uppnå hälsoeffekter. Det digitala servicelandskapet erbjuder en grund för fortsatt arbete för att bygga de nödvändiga plattformarna DWS.

Det beskrivna samspelet mellan DWS och digitala servicelandskap utgör basen för forskningsfrågan: Hur kan ett digitalt servicelandskap förbättra yngre äldres användning av DWS?

I avhandlingen studeras och presenteras olika sätt att närma sig de faktorer som påverkar de yngre äldres förmåga och vilja att använda och dra nytta av DWS. Om de yngre äldre följer rekommendationerna för att tillämpa DWS, kommer tjänsterna att gynna dem när det gäller ett hälsosammare åldrande, minskad ohälsa och högre livskvalitet. För utvecklare och leverantörer av DWS kommer det att öppna affärsmöjligheter under förutsättning att de förstår de yngre äldres behov och krav. Dessutom kan DWS bidra till betydande hälso-, sociala och ekonomiska fördelar för samhället. Proaktiva wellnessprogram för yngre

[1] Fortsättningsvis i detta abstrakt används DWS för både singular och plural.

äldre kommer att ha kumulativa effekter på förutsättningarna för en god hälsa.

Arbetet med denna avhandling bygger på en explorativ ansats. Datainsamlingen genomfördes med hjälp av enkäter, litteraturgenomgång och fokusgrupper, och det data som samlades in sorterades, analyserades och tolkades. Under arbetet utvecklades behovet av att få insikter från ytterligare perspektiv med konsekvensen att data adderades, vilket bidrog till en djupare kunskap om de yngre äldre, DWS och digitala servicelandskap.

De yngre äldre utgör som grupp en mycket stor marknad bestående av närmare 100 miljoner människor i Europa. För yngre äldre har digitaliseringen utgjort en del av deras liv. Digitaliseringen har gett dem nya möjligheter att kommunicera, och samspelet med serviceleverantörer sker via gränssnittet på digitala enheter. Men bakom gränssnittet finns, inom ramen för ett digitalt servicelandskap, ett ekosystem som innehåller de nödvändiga verktygen för de yngre äldre att uppnå det välbefinnande de söker. För att förstå målgruppen är det dock viktigt att beakta de fyra hälsodimensionerna: i) fysisk hälsa, ii) socialt välbefinnande, iii) känslomässigt välbefinnande och iv) intellektuellt välbefinnande. Tillsammans utgör de fyra dimensionerna ett helhetsperspektiv på yngre äldres välbefinnande, och de utgör en viktig grund för att motivera de yngre äldre att använda DWS. Resultatet av forskningen visar att de yngre äldre måste motiveras för att anamma de erbjudna tjänsterna. Motivation som påverkar yngre äldre kan vara av både inre och yttre karaktär och måste därför beaktas vid utveckling och tillhandahållande av DWS. Därför måste serviceleverantörerna uppfylla de förväntningar, behov och krav som de yngre äldre har och utveckla tjänster som är lämpade för målgruppen. Detta räcker emellertid inte, eftersom avhandlingens resultat visar att de yngre äldre vill vara i en kontext där de känner sig trygga

Informationssystem utgör en bas för att möjliggöra kommunikation och interaktion med och via digitala enheter som smartphones, surfplattor och aktivitetsarmband. Internet utgör en plattform för service och social interaktion. Tjänster som erbjuds på internet gör det möjligt att handla, bli underhållen, underhålla och vara delaktig i utbildning, forskning, affärer och mycket mer. Internet är med andra ord en viktig del av infrastrukturen för DWS och digitala servicelandskap.

En effektiv och väldesignad DWS och dess servicelandskap kan skapa win-win-win-situationer. Den första handlar om de yngre äldre som kan dra nytta av DWS genom att öka sina chanser för ett längre, hälsosammare och lyckligare liv och därigenom uppnå välbefinnande. Den andra win-situationen handlar om utvecklare och leverantörer som kan skapa affärsmöjligheter genom att lyckas med att utforma väl fungerande DWS som riktar sig till de yngre äldre. Slutligen handlar den tredje win-situationen om familj, vänner och samhälle. För familjer och vänner kan väl utformade DWS vara fördelaktiga eftersom de hjälper de yngre äldre till

god hälsa och därmed minskar behovet av insatser från familj och vänner. För samhället finns det ekonomiska fördelar eftersom hälsosammare och lyckligare yngre äldre vid god hälsa kommer att minska efterfrågan på vård och omsorg. Tillsammans utgör de tre win-situationerna en möjlighet till en bättre morgondag för alla berörda.

Denna avhandling har skapat en grund för fortsatt forskning, testning och utveckling av DWS och dess digitala servicelandskap. Den har visat att det finns ett behov av en djupare förståelse för de fördelar som ett välutvecklat servicelandskap för DWS kan erbjuda människor i allmänhet och gruppen yngre äldre i synnerhet. Dessutom finns det grund för ytterligare forskning kring win-win-win-situationer när yngre äldre är försedda med digitala wellnessenheter. Det skulle vara intressant att lägga kraft på hur dessa enheter skall konstrueras och om samhället ska tillhandahålla enheterna gratis, med rabatt eller med någon annan lösning.

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Hans Allmér

List of original research papers

Allmér, H. and Råberg, M. (2013). Young-elderly and digital use. Proceedings of the 36th Information Systems Research Seminar in Scandinavia, IRIS 36, Oslo, Norway.

Råberg, M. and Allmér, H. (2013). Young-elderly and digital services. Proceedings of the 36th Information Systems Research Seminar in Scandinavia, IRIS 36, Oslo, Norway.

Allmér, H. (2014). E-servicescape is plausible. IRIS selected papers of the 37th Information Systems Research Seminar in Scandinavia, AIS Electronic Library (AISeL), Vol 5.

Allmér, H. and Marcusson, L. (2018). Altruistic young elderly in Sweden – a pilot study. International Journal of Business and Management Invention, Vol. 7, No. 5, p. 66-79.

Allmér, H. (2018). Digital wellness services´ servicescape for young elderly. Proceedings of the 31th Bled eConference Digital Transformation – Meeting the Challenges, Bled, Slovenia.

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1. Introduction

"Times they are a changing"
- Bob Dylan -

This section addresses a number of episodes showing changes over time where digital devices and digital services in general, and digital wellness services in particular, play a major role. This includes an indication of whether and how services offered were adopted by individuals. It contains an introduction and background to the research project, the perceived problem area and finally purpose, research goal and research questions.

From my own experience especially in marketing travel services and from the start of the millennium as lecturer in marketing, I have encountered problems regarding the development and provision of digital services in general and for the elderly in particular. In addition, I myself was a victim of the digitalisation of the travel industry as more and more clients started to book travel themselves. I also noticed the effects of digitalisation in the daily life of family, friends, and in society in general.

Some years ago, a good old friend of mine told me that he and his teenage daughter were cleaning the attic. She suddenly asked him what that strange machine was that was standing in the corner and he replied that it was a typewriter. She asked him what you do with such a device. You write, he answered and put some paper in the typewriter and told her to write something. When she started writing, she was amazed it printed instantly. This episode shows a view of the physical world of yesterday, the digital world of today and how different generations interpret it. The episode also gives a hint of what the world looked like when the people born before the dawn of the Internet entered the labour market and how it seems for the children born in the digital age.

For some people it is obvious that they are not fully a part of the increasingly digitised society and therefore feel excluded and left out. For instance, banks more or less demand people to carry out their banking digitally. In radio, TV and newspapers people are referred to the Internet for more detailed information. For some people this does not cause any problem but for others it is quite the opposite. I am aware of several cases, including my mother, where relatives do the banking for those who are not capable of doing it themselves. I am also aware of cases where people are frustrated because they are not able to access what is referred to in media and provided on the Internet. However, from the providers' perspective, such as a bank, it may seem as if these people are using the digital service even if they are doing so with the help of a friend or relative. This in turn

may give the impression that more people are using digital services than is actually the case.

In 1998, I gave my father a laptop on his 79th birthday. My idea was to support him on his journey to enjoy the Internet world, where he could find out more about things that interested him. In order to help him understand how, and what could be found on the Internet, I showed him some pages about classical music and especially one about the famous Swedish choir Orphei Drängar, OD. My father was a member of the choir during his law studies at Uppsala University and he continued to support them throughout his life. He was deeply impressed and curious about what the magic device, called laptop, could show. However, although I and other family members put a lot of effort to get him and the computer to become friends it never happened. When he passed away in late 2003, the computer had barely been used.

A few years later, my sisters and I gave our mother a mobile phone when she turned seventy-five. We explained to her the benefits that such a device can bring when it comes to services like reaching out to others but also to allow others to keep in touch with her. Sadly, my mother never got used to the mobile phone as it proved too hard for her to understand and master.

From friends I have been told similar stories about how their parents get along with devices like mobile phones and computers and the services they offer. In some cases, they learn the basics quickly but for others it is quite the opposite. These episodes gave me an insight into how digital devices and their services are rejected by people who could benefit greatly from them, simply because these devices are not designed to meet these users' requirements. The idea to offer tools and services that could enhance my parents' quality of life was shattered by the fact that these devices were simply too complicated for them to handle. It gave me a feeling that devices and services are sometimes developed by the same group of people who themselves want to use them. This raises question marks about why people who could benefit from devices and services are more or less prevented from using them as they are not designed in a way that fulfils their needs. This can in turn affect their ability to take advantage of what is offered in order to provide them with opportunities for increased wellness.

Dahl (2018) describes that for the older people she interviewed, digitalisation feels as if society has changed language without ensuring everyone understands it. The author adds that some elderly do not use digital devices, because they do not want to look stupid when they face problems monitoring them. In addition, they feel excluded from society as familiar media and service providers (e.g. newspapers and banks) more frequently refer to the Internet. Campbell (2015) tells of an older man who was frustrated since he was not able to understand how to monitor the interface, so he could get access to the information he was looking for. In addition, Petrovčič, Rogelj, and Dolničar (2018, p. 251) state that

"Irrespectively of whether older adults are seen through the lens of chronological age or functional age, they face age-related changes (e.g., in their hearing, vision, motor skills, and/or cognitive skills that may affect their use of mobile phones". There are many similar experiences to be found and e.g. Olsson, Samuelsson, and Viscovi (2017); Olsson and Viscovi (2016); Viscovi, Olsson, and Samuelsson (2017a, 2017b) argue that elderly people may experience exclusion because they are not capable of managing digital devices and this can adversely affect their wellness.

The meaning of wellness is often based on the World Health Organization (WHO, 1946) definition of health in the sense of more than freedom of illness, disease, and debilitating conditions. Wellness can be described as a complete state of physical, mental, and social well-being and in its most general form is a state beyond the absence of illness and that it includes different dimensions (Roscoe, 2009). For example, Adams, Bezner, and Steinhardt (1997) described wellness in several dimensions, which shows that beyond illness there are multiple ways to build and enjoy wellness. In order to establish the starting point of this thesis, it will adopt the wellness definition of Carlsson and Walden (2017a, p. 3) who define the term as "Wellness – to be in sufficiently good shape of mind and body to be successful with all everyday requirements". Their definition emphasises what I wish I could have offered both my parents and what I wish I could contribute to my mother's wellness, as well as to other people. Thereby this wish points toward the aim of this thesis.

In this thesis, I will justify and argue that wellness can be formed and maintained with digital wellness services (Henceforth DWS). The concept digital servicescape will be introduced for an environment in which it is easy, effective and efficient: i) to access and use DWSs, ii) to develop and enhance the use of them, and iii) to sustain the use of the services for extended periods of time. The DWSs are services provided through digital devices, e.g. smartphones, bracelets, and tablets, by using digital environments such as Internet, cloud services, and websites. The focus for the work on DWSs will be the age group 60-75, which I define as the young elderly.

This introductory chapter highlights different aspects as well as research in order to introduce the thesis. Some sections are more concise as they deal with areas discussed in more detail in chapter 3 and other sections are discussed in more detail here. Since the thesis aims to justify and work out arguments that wellness for young elderly can be provided through DWSs in digital servicescapes, the next section will highlight aspects of importance to them. However, it must be mentioned that when the question marks arose, my parents were about to belong to the group elderly, rather than the young elderly, which is equally or even more challenged in handling digital devices.

1.1. Motivations

In order to successfully encourage young elderly to exploit the benefits that DWSs can offer to enhance their wellness, they must feel motivated and according to Cooke, Melchert, and Connor (2016) wellness is a closely related construct to well-being and quality of life. Renger et al. (2000, p. 404) claim that "wellness represents the optimum state of well-being that each individual is capable of achieving, given his or her own set of circumstances". Roscoe (2009) states that wellness is a versatile, synergistic, and dynamic concept. It mirrors a continuum, not a final state, and is not just about avoiding illness. In addition, discussing older adults, Annear et al. (2014) claim that wellness deals with enabling them to reach their full potential. To achieve wellness they must be motivated. This shows that wellness is subjective since it is grounded in every individual's ability to achieve it and so each individual will interpret wellness in their own way depending on what motivates them. This means that well-functioning wellness services must be developed and co-created together with the target groups and not just for them. Co-creation is defined as a method creating values together in interaction between two or more actors. Co-creation occurs "where the actors' process merge into one collaborative, dialogical process" (Grönroos & Gummerus, 2014, p. 209). The participant's degree of involvement may vary, and Engström (2014) claims that in health care research, the patient's degree of involvement is often relatively low and their participation role is often rather passive. In line with this it can be mentioned that Fudge, Wolfe, and McKevitt (2008) argue that within co-creation the difference between involvement and participation needs to be taken into account as it could affect the outcome of the research. This indicates that the empowerment of the participants is of interest when working with co-creation. In addition, Anderson and Funnell (2010) claim that empowerment does not automatically provide fruitful co-creation and in addition Forbat, Hubbard, and Kearney (2009) argue for the need of assistance for the participants in order to achieve the objective of the work. Nevertheless, in summary, according to Grönroos and Gummerus (2014) co-creation is a good method for developing services. However, co-creation alone is not enough and each individual must be given the opportunity to tailor wellness services in a way that suits them and meets their requirements.

Digital devices and the services they offer can contribute positively to people's quality of life and in turn their sense of wellness. However, they have to be motivated to take advantage of the benefits offered by, for example, DWSs. Regarding aging and wellness, Benka Wallén, Ståhle, Hagströmer, Franzén, and Skavberg Roaldsen (2014) state that aging is associated with a gradual decline in physical activity while increasing the risk of disease. They claim that physical activity, including exercise, is documentedly effective for both prevention and treatment of various age-

related diseases. In addition, they show that about half of all Swedes between the ages of 65 and 75 exercise less than the 150 minutes per week recommended by the Swedish State Public Health Institute. The authors argue that if more elderly people achieve these recommendations on physical activity it will result in long-term benefits not only to the individual in terms of healthier aging, reduced ill health and higher quality of life, but also provide health-economic benefits through reduced healthcare burdens. They add that the challenge is to develop efficient, cost-effective strategies that can be implemented on a broad front. Evidence from the literature together with my own experience and anecdotal evidence from friends and acquaintances show that there is a need for a deeper understanding of how to meet this challenge and the challenges that lie beyond. Hence, it is important to know and understand the key characteristics of different target groups as their needs and requirements can vary depending on, for example, age, interest, education, occupation, and willingness to adapt to new technology.

1.2. Behaviour

In order to justify and work out arguments for how young elderly can benefit from what DWSs can offer it is of importance to understand their behaviour and what influences it. People have for many years paid attention to what determines people's behaviour and according to Giddens (1989) the ideas have been passed on from generation to generation. He describes Auguste Comte (1789-1857) as the one who was first to use the term sociology. Comte (Giddens, 1989) argued for a scientific approach in order to develop knowledge about society. The purpose was to make a positive contribution to people's welfare. Later scientists like Émile Durkheim, Karl Marx, Max Weber, Michel Foucault, and Jürgen Habermas have continued the work and have been and still are influential in sociology. Durkheim focused on studying social facts as things and he predicted that sharing work will lead to people becoming more dependent on one another. Mutual dependence is a social factor that can be linked to Durkheim's research regarding important factors behind suicidal behaviour. For instance, he showed that people who are single and people who do not have children are more likely to commit suicide, compared with those living in partnerships and those with children. Marx has had a great influence in many areas and his research often focused on economic issues linked to sociological aspects. Weber's research on bureaucracy and rationalization has gained a lot of interest as his ideas are based on social and economic life in connection with efficiency.

Foucault and Habermas are two of the most influential sociological thinkers of our time. Foucault's work on power was related to previous work by Marx and Weber and he questioned social power and argued that

knowledge could be a way to take control over people. Habermas claimed that economic growth seems to be what is most important in today's society and that this can create a lack of meaning in people's everyday life (Giddens, 1989).

Culture is a term that was first formulated by anthropologist Edward B. Tylor in 1871 who argued that it can be seen as "that complex whole, which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society" (Bakka, Fivelsdal, & Lindkvist, 2014, p. 125; Hutnyk, 2006, p. 351). According to Schein (2010)the culture of an organisation can be seen on three different levels. He proposes a model (figure 1) of organisational culture with: i) Assumptions, ii) values, and iii) artefacts. Assumptions are things taken for granted and that people pay little or no interest in as long as they are available and working as expected. The next level values are described as having an intrinsic worth. The third level artefacts are things that are visible, tangible, and audible for everyone.

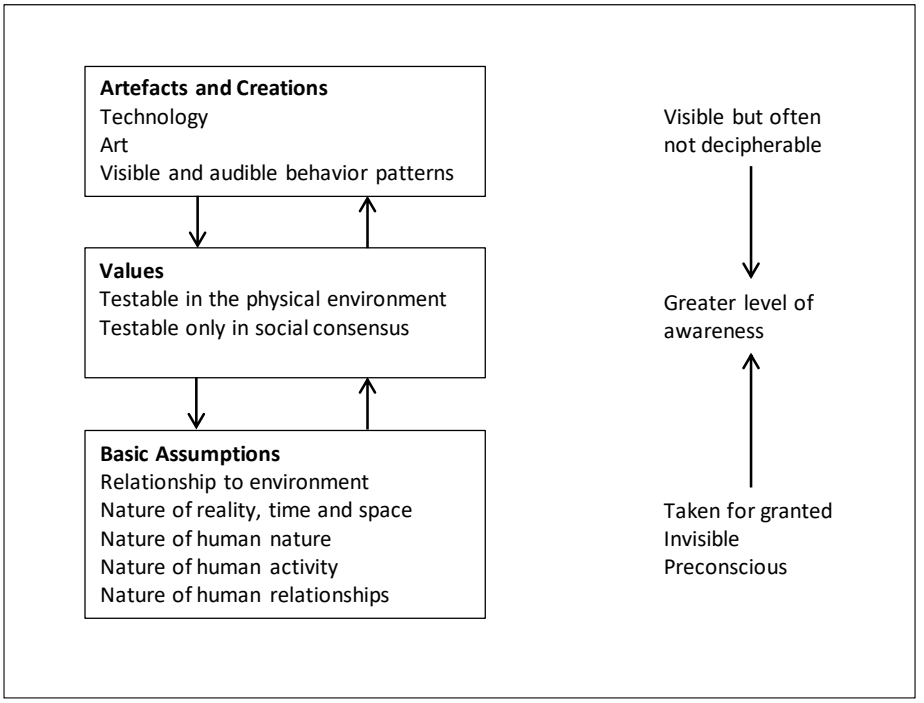


Figure 1. Levels of culture and their interaction (Schein, 1985, p. 14)

Bratton (2007, p. 414) states that "Artefacts are observable material objects such as technology and art that the organization uses to express its culture". This means that DWSs can be regarded as artefacts because they are technology made by people and they are observable signs and symbols within the culture of an organisation. Artefacts are the visible, tangible and audible remains of a behaviour that is based on cultural norms, values and

assumptions (Gagliardi, 1990). Gleasure and Grace (2016) discuss IT-enabled healthcare and note an increasing interest among healthcare professionals as it can help to achieve wellness for the patients by using digital applications. According to Peppard and Ward (2016) digital applications are nowadays called 'apps' which is the term that henceforth will be used. Gleasure and Grace (2016, p. 269) developed a mobile application to assist the detection of wellness change among outpatients. Their study provides insights on using software artefacts related to changes in the users' wellness and their opinion is that "Clearly, the artefact is in need of on ongoing development and more systematic evaluation". What the authors state is in line with previous research of Gregor and Hevner (2013); Hevner, March, Park, and Ram (2004); March and Smith (1995). Artefacts are on a visible level but not entirely possible to interpret, and assumptions are of an invisible and taken for granted level, while ultimately values mean a higher degree of awareness.

Hatch and Cunliffe (2013) discuss Schein's model (figure 1) and they stress that from the perspective of members of a culture, assumptions are something that can be seen as "a truth" that pervades the entire culture and is not questioned by the members. They (Hatch & Cunliffe, 2013) argue that over the years the idea of assumptions has changed. At first, the view was that people seek prosperity, and then the idea changed towards people being rational and thereby predictable. Later an idea developed that assumption is fragmented and gives a wide range of interpretations. Values are more visible compared to assumptions and are the foundation of what members of a culture consider as right or wrong. Artefacts are things that have been created by the members of a culture and they are more or less aware of them. According to Schein (1985) the foundation of a culture consists of the assumptions that have gained acceptance in the culture. He states that individuals who join the culture will or rather have to be socialised to what is accepted within the culture. However, Schein's model (figure 1) visualises a culture change over time and therefore the arrows are bidirectional because what is considered as assumptions at one stage can later be seen as values and even artefacts. As mentioned the model takes its starting point in the culture within organisations. However, within an organisation are people, such as the young elderly, who interpret in different ways. The young elderly possess a lot of experience from the companies and organisations they have worked in, and in some cases still work in, and therefore their input can be of interest.

Schein and Van Maanen (2016, p. 171) discuss the "digitization and automation of everything" and argue that it has shifted the power of managers to run and lead an organisation because a lot of employees nowadays are specialists in often narrow digitalised and automated areas and this can be hard for the managers to overview. According to the authors, this is something that has changed from the time the young elderly entered the labour market and they state that "People are placing less

value on traditional concepts such as loyalty and acceptance of authority based formal rank, age, or seniority, and are instead placing more value or individualism and individual rights vis-à-vis large organizations". This points to an area that can be hard for managers to overview and in turn points towards more co-creation with the users or intended users such as young elderly. Co-creation can contribute with valuable insights and therefore may decrease the risk of developing goods and services of little or no interest to the target group. For the young elderly, digitalisation, with the opportunity to benefit from DWSs, can be regarded as artefacts since they represent services created and developed by people for people and visible in digital devices. The DWSs can provide wellness values to the young elderly but that does not lead to an assumption that every young elderly is automatically prepared to adopt and adapt to the services offered. Hence, it is of importance that DWS developers and providers understand the behaviour of the young elderly and realise that they need to be motivated to benefit from the DWSs offered.

1.3. Diffusion of innovations

In 1962 Rogers (2003, p. 281) presented a theory (figure 2) which showed people's individual differences in their willingness to adopt innovations. He (2003, p. 170) states that the innovation-decision process "is the process through which an individual (or other decision making unit) passes from first knowledge of an innovation, to forming an attitude toward the innovation, to decision to adopt or reject, to implementing the new idea, and to confirmation of this decision". The concept focuses on the willingness among people to adopt to innovations in comparison to other people.

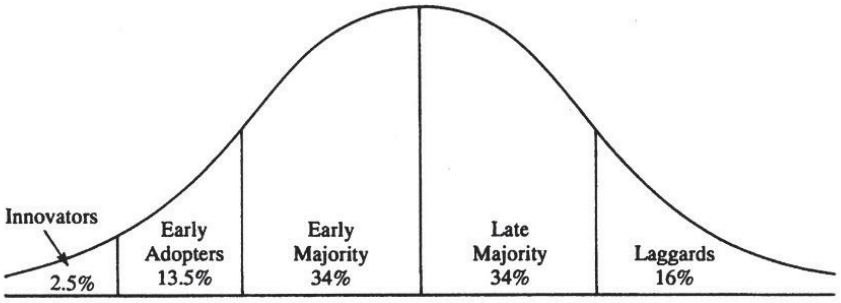


Figure 2. Diffusion of Innovations (Rogers, 2003, p. 170)

Rogers (2003) describes five perceived elements of innovations: i) Relative exchange, ii) complexity, iii) compatibility, iv) trialability, and v) observability. Regarding these five he claims the importance of improved innovation compared to the existing version and in line with how complex the new version is to handle compared to the familiar one. In addition to

this comes the compatibility of the new version compared to the former and how easy it is for prospective customers to try and observe. In addition it can be highlighted what Sugars (2006, pp. 107-110) refers to as the "The Ladder of Loyalty" where he proposes six stages to build customer loyalty. The first stage he names suspect as he regards people as potential customers if they fit within the target group on the market and thereby potentially interested in what a company has to offer. If a first step towards business is taken they are considered to be on the next stage and are therefore termed a prospect. A prospect who accepts an offer for the first time is classified as a customer and if the customer purchases for a second time he is considered to be a member and to keep them as loyal customers it is of importance to offer them loyalty awards (e.g. membership pack/card). The next step on the ladder is advocate and stands for customers who promote you to other people and according to Sugars (2006) they are an important capital asset to your business. The sixth and final level consists of raving fans and the difference is described as "An advocate is someone who will sell for you whereas a raving fan is someone who can't stop selling for you" (2006, p. 110). The Ladder of Loyalty expresses the importance of knowing your customers and doing whatever is needed to make it interesting for them to climb the ladder as far as possible, irrespective of which group, from innovators to laggards, they belong to. From a customer perspective, such as young elderly, it is of interest to climb the ladder to benefit from what DWSs can offer as it can help to achieve a longer, healthier and better life. For the developers' and providers' perspective, it creates an opportunity to do business and make a profit.

1.4. Adoption process

People's preparedness to adopt new products (goods and/or services) varies. However, to adopt a product the consumer has to feel a need or be aware of a problem (Armstrong, Brennan, Harker, & Kotler, 2015; Baines & Fill, 2014; Fahy & Jobber, 2012; Kotler, Armstrong, & Parment, 2011; Solomon, Marshall, & Stuart, 2008). The authors state that recognition of a need or awareness of a problem is the first step out of five in the buyer decision process (figure 3). The second step concerns searching for information in order to meet the need or solve the problem. Thereafter, the evaluation of options takes place and this in turn leads to a purchase decision. The final stage is post-purchase behaviour dealing with the buyer's experience of purchasing the goods and services.

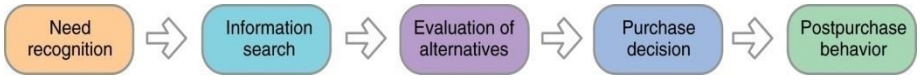


Figure 3. Buyer decision process (Kotler et al., 2011)

In a major purchase, a cognitive dissonance can follow concerning whether the customer is satisfied or dissatisfied with the outcome of the purchase. Dependent on the buyer's reaction different actions can result. Some buyers may contact the company whilst others may just stick with their purchase decision. In addition, some buyers will communicate with other people to share their opinion on the outcome of the purchase and this kind of communication is termed Word of Mouth (WOM) (Godson, 2009; Grönroos, 2015; Gummesson, 2008). The term deals with the phenomenon that customers share their experiences as consumers and give each other advice. Research (Kietzmann & Canhoto, 2013) shows that people tend to place greater trust in other people's communication than in the marketing message of the companies. Hence researchers as well as marketers emphasise the importance of focusing on customer satisfaction (Szmigin & Piacentini, 2014).

Kietzmann and Canhoto (2013) discuss Word of Mouth and argue for a better understanding of how people interact on the Internet in various social media platforms. They claim the importance of managing what is termed as Electronic Word of Mouth (eWoM). Their (2013) findings indicate that out of their 58 respondents (29 male and 29 female), born between 1955 and 1992, more than half (57%) answered that they read and post eWoM equally often. 40 percent read more eWoM than they post and for 2 percent it was the opposite. 18 percent use their mobile devices more frequently, and 33 percent their computers to access eWoM. When it comes to sending eWoM 24 percent use their mobile devices, 30 percent their computers, and 52 percent use them evenly. However, service will be further presented in section 1.7.

1.5. eHealth

In the context of wellness in general and digital wellness in particular, the term eHealth is often mentioned. Therefore, and for clarity, this section highlights similarities and differences between these areas. The World Health Organization (WHO, 2012, p. 1) defines "eHealth as the use of information and communication technologies (ICT) for health". They argue for a need to take technological advances into account for promoting health worldwide. In addition, they state that eHealth can provide an enhanced flow of information in order to deliver health services and manage health systems. The potential of ICT to provide eHealth is huge and has a vast impact on the ability to benefit people's health regardless of whether they live in remote areas or in cities (Ruxwana, Herselman, & Pottas, 2014; Ruxwana, Herselman, & Conradie, 2010). The keys for successful eHealth implementation are quality, safety, effectiveness and efficiency of healthcare services (WHO, 2012). Miah, Hasan, and Gammack (2017, p. 320) describe that online health services can considerably improve health

care in developing countries. In a study conducted in Bangladesh they observed several benefits that eHealth can provide and highlight: i) convenience of appointment, ii) decreased commuting costs and time, iii) reduced patient waiting period, iv) improved access to medical specialists, and v) health information along with plans and follow-up.

The Swedish daily newspaper Dagens Nyheter (2017) describes that the IT-giant IBM's supercomputer Watson is about to apply for a license to practise medicine and become a medical doctor. In the article it is claimed that the doctor will soon be available via the smartphone and one question raised in the article is whether we will soon have an app that can detect Alzheimer or Parkinson? However, building eHealth has important matters to consider.

Albuquerque and Gondim (2016); Kotz, Fu, Gunter, and Rubin (2015) argue for the importance of security for people using eHealth. They claim that the focus has to lie on both user and provider but adds that the user is the most exposed and vulnerable. Agarkhed, Mundewadi, Patil, and Sunita (2016) discuss privacy preservation and trust regarding eHealth architecture related to their research on mobile healthcare monitoring system and they stress the importance of storage privacy in which they include: i) data confidentiality, ii) anonymity, iii) unlinkability, iv) keyword privacy and, v) search pattern privacy. In addition, according to Flygt (2017) the County Council in Stockholm plans to introduce digital healthcare services and make it compulsory for healthcare providers to offer the service. The article describes that patients experience it as outdated and inaccessible not to offer digital health services. The first four services offered by the County Council are: i) patients should be able to read their patients records, ii) book and cancel appointments, iii) renew prescriptions and, iv) electronic free card for those patient affected by the benefit. This could indicate that the developments predicted by Agarkhed et al. (2016); Kotz et al. (2015) could perhaps be fulfilled in the future.

However, it must be stated that health, including eHealth is not the same as wellness, including DWSs. Greenberg (1985) defines health as absence of disease which means not being ill. Wellness, on the other hand, is more about being in harmony and balance. This can be interpreted as health referring to physical and mental well-being, while wellness concerns balance, harmony and being in sufficiently good physical and mental balance to be successful in all everyday requirements. This means that wellness is more related to a harmonic and balanced lifestyle (Edlin & Golanty, 1992). However, wellness will be further presented in section 1.8.

To sum up, section 1.1 to 1.5, young elderly's use of DWSs from the above five general areas:

- The willingness of young elderly to adopt innovations.
- Feeling motivated for wellness activities is important in order to be willing to adopt and adapt to DWSs.

- Behaviour is dependent on several factors that should be considered when developing and providing DWSs.
- DWSs do not need confidential data, making them different from eHealth services, the use of digital devices and services for health care.
- The buyer decision process is of importance.

1.6. The young elderly generation

As the focus in this thesis lies in justifying and working out arguments for providing DWSs aimed for the group of young elderly, this section highlights the generation to which they belong.

The young elderly were born in a time where the aftermath of two world wars and the Wall Street Crash in 1929 had major impacts on the generations of their parents and grandparents. These events, among others, affected the generation of young elderly regarding for example values, belief, morals, and customs. This in turn also affected the development of society including its culture. For example, the young elderly is a generation that made significant achievements in healthcare and opportunities to self-realization in comparison with previous generations (Parment, 2013). This gave the young elderly an opportunity that previous generations did not have when it comes to developing their physical, intellectual, social and emotional wellness. The reduction in the number of working hours, more vacation time and the expanded opportunities for sports and exercise increased their chances of wellness.

Since the vast majority of the young elderly, compared to previous generations, were given the opportunity to spend more years in school and also a chance to study at higher levels, they were given the opportunity to increase their intellectual wellness. This also affected their social and emotional wellness as the possibility for self-realization increased when they had more time to spend on things that interest them and better prerequisites for career development were available. On the one hand, this has been an important development, but on the other hand it has also led to some young elderly experiencing loneliness, exclusion and alienation from society. For some young elderly this experience may have increased over the last decade as nowadays it is assumed that everyone is online and are prepared to share information about themselves on corporate web sites or on social media. This is for the young elderly artefacts which are visible to them, but not necessarily values they share and want to be a part of. For example, a 62-year-old friend of mine refuses to read or reply to SMS-texts and not even his two teenagers, who probably regard it as a basic assumption, can persuade him to use the Internet. This resistance to digital media is in contrast with the previously mentioned example of the focus group member who teaches other people how to use digital devices and the opportunities they offer. This indicates that there is no universal image,

but rather the picture is multifaceted and therefore has to be handled as such.

Regarding the young elderly, they belong to a generation who grew up after the World War II where the economic development was strong. The strong development offered them opportunities most people in previous generations could only dream of (e.g. women's liberation, struggle for equality, searching for a meaning in life, and travelling). The young elderly belong to a generation where a strong state, county councils and counties emerged in Sweden and where these authorities took more and more responsibility for the wellbeing of the individual. This in turn generated a trust in the authorities as a guarantor for each individual's safety and security and to some extent even people's wellness. However, it also led to criticism of bureaucracy, big brother mentality, lack of motivation to work, and objection to interference in and limitation of the individual's freedom.

The young elderly have grown up, worked and now retired in a society that has been subject to constant change. Digitalisation has played an important role in shaping the society and culture in which they live. For the younger generations digitalisation is something that always was there for them. However, for the young elderly it is a fairly recent development and is not taken for granted as it may be for younger generations (Parment, 2014). Hence, research on culture can provide important and useful insights in order to understand young elderly's relation to and perception of digital services in common and DWSs in particular.

On one hand, for the young people of today the Internet and the services provided are quite simply ubiquitous. The young elderly, on the other hand, see the Internet as adding value to their lives and they take advantage of online services when they are useful. However, they do not live their life on and through the Internet as younger people tend to do (Cockrell, Cockrell, & Harris, 1998; Parment, 2013). This indicates a difference between young people and young elderly regarding their relation to the Internet. When it comes to the young elderly, Internet provides opportunities to exploit services and can therefore be seen more like values but also as artefacts. Regarding the young elderly it is of importance to create everyday routines that enable a higher level of wellness to them and where DWSs are not just technology and an artefact, but rather an assumption that means and provides wellness values to them.

When the young elderly were born and grew up, there was nothing like today's digital devices like computers, tablets, and smartphones. They grew up in a world dominated by the East and West blocs and, where radio, television and newspapers were a central part of the information and amusement opportunities. Since then much has changed and this is reflected in their actions. Hence the focus on young elderly research on generations has to be presented. Different generations have different experiences of digital devices. For some, digital devices might provide

enjoyment and create opportunities, for others it might be quite the opposite as it can be a challenge to understand how to use these devices and why there is a need to use them. However, it is not easy to define and delimit generations and in the field of sociology, effort has been put into this matter. Overall, all the things they have experienced during their lives affects their willingness to adopt to changes and innovations.

To sum up, section 1.6, the following factors have had a huge influence on the young elderly generation's mindset:

- They grew up in the aftermath of two world wars, and the subsequent Cold War.
- They belong to a generation affected by strong financial development, major advances in health care, social security, equal opportunities, women´s liberation, and strong belief in civic participation.
- Digital devices and digital services have been developed and added to their lives, i.e. they do not feel completely comfortable with digital technology.

1.7. Service, servicescape, and digital servicescape

This section focuses on the young elderly's use of DWSs. Hence, the emphasis on wellness, wellness routines, and wellness services as foundations for DWSs.

The focus on the group of young elderly leads to an interest in various fields such as service, servicescape, e-servicescape, and digital servicescape. Grönroos (1998) states what differentiates goods and services. He shows that services are intangible, inseparable, variable, and perishable. Services are intangible as they are not possible to see, taste, feel, hear or smell before buying them. They are inseparable, as they cannot be separated from their provider. They are variable as the quality of the service is subject to and dependent on who provides them as well as how, where, and when. Finally, they are perishable as they cannot be stored for later purchase or sale. Grönroos (2015, p. 51) states that service can be classified in several different ways and mentions two examples: i) high-touch / high-tech services, and ii) discretely / continuously rendered service. First, high-touch services are commonly dependent on people in the process providing service to customers (e.g. massage and visit to a doctor), and high-tech is more based on physical resources usually including automated systems, and information technology (henceforth IT) (e.g. telecommunications and vending machines). Secondly, starting from the relationship with customers, continuously rendered services and discrete transaction are about services such as security service, and banking where an ongoing flow exists between the service provider and the customer. Therefore, the interaction between the service provider and

the customer makes every contact more or less unique, and this has to be taken into account when developing and implementing services. This, regardless of the type of service, has to be taken in consideration in service developers' and provider's strategic work. In addition, it is of great importance to understand that the customer is a part and a co-producer of the consumption of the service and therefore affects the outcome of the service (Grönroos, 1998, 2015; Grönroos & Voima, 2013). This indicates an approach that high-touch services depend more on the interaction between the provider and the customer. However, according to Grönroos (2015), it could be quite the opposite since a less frequent contact between the supplier and the customer makes every contact crucial and thereby plays a major role in the interaction.

The concept of servicescape, first introduced by Booms and Bitner (1981), is important since a servicescape is understood as the landscape where the interaction between the service providers and the service users occurs. The interaction can take place in different spaces, for example, a fitness studio, a supermarket or a travel agency. However, regardless of where the interaction takes place, it is important that the servicescape is designed in a way that attracts the target group and meets its needs. In line with digital services and the concept of e-servicescape (Harris & Goode, 2010, p. 231) e-servicescape is defined as "online environment factors that exist during service delivery". Hopkins, Grove, Raymond, and LaForge (2009) state that the e-servicescape is a site on the Internet where customers and service providers interact. The interaction includes the company's design and features. The digital services can be provided by using various devices such as computers, tablets, smartphones, activity bracelets (e.g. training), and specialised watches (e.g. training, playing golf) and these can in turn be connected to cloud services and websites.

Since the advent of the Internet and digital technology there have been many combinations of online concepts. Many of them describe what is happening on the Internet and try to distinguish between online offers of goods and services and, for instance, those offered at a physical store. Some of the most common are e-commerce, m-commerce, virtual servicescape, e-servicescape, and digital servicescape. During the work on this thesis, I have perceived a change from the use of the concept of e-servicescape, used in the original research papers, in favour for the concept of digital servicescape. The concepts of digital servicescape and e-servicescape will henceforth be used in parallel but the concept of digital servicescape will be preferred. Based on the previous section's discussion, research on service, servicescape, e-servicescape, and digital servicescape needs to be highlighted.

Services exist together with physical products and constitute together and alongside each other the core of the offer to customers (Grönroos, 2015). Customers take advantage of offers and thereby integrate during the usage process when they are consuming. He (2015, p. vii) claims that

"Hence, customers consume and use goods, services or any resource *as service* to achieve something". Vargo and Lusch (2008b, p. 36) state that "service is a simple, yet powerful and multifaceted construct and that it is the correct designation, not only to characterize emerging and converging marketing thought, but also to accurately inform and motivate the associated research, practice, and public policy". According to Grönroos (2015) service as a phenomenon is complicated to define as the term has many meanings. Solomon, Marshall, Stuart, Mitchell, and Barnes (2013) claim that the foundation of service lies in that it is intangible and therefore the customer cannot see, touch or smell services.

A digital servicescape is a digital platform that offers access to DWSs, as well as collecting and communicating results from the user. It combines information about wellness, services and digital services, and offers an ICT infrastructure for service users, providers and developers. Mummalaneni (2005, p. 526) made the following comparison (a digital servicescape may offer a virtual storefront) "The environment of the virtual storefronts created through Web page design is not unlike the atmosphere of the brick-and-mortar stores with their emphasis on layout, merchandise displays, lighting, signage and so on. Analogies have in fact been drawn between real and virtual stores and their features compared". In addition, a digital servicescape has a financial and business context since it acts as marketplace. The content of a DWS has a cost and a price even if, to some extent, the use of the service may be free for the user. Although, developing, providing, maintaining and supporting a digital wellness service will carry a cost for service developers and providers, they will over time be able to build up a business that can cover its costs and preferably generate a profit.

Enis and Roering (1981) state that service is not the same as objects and they claim that buyers buy something that provides a benefit to them regardless of whether it is a tangible object, service or a combination of them. Gummesson, Glynn, and Barnes (1995) stress the question if people buy goods or services. They state that customers do not buy goods or services and argue that customers buy offerings that bring values to them. This indicates that the focus in marketing has to be on the offerings and the values, rather than goods or services. Hence, according to Enis and Roering (1981) it is necessary to formulate offers that customers perceive as meant for them.

1.7.1. Service Logic and Service Dominant Logic

Service Logic (SL) and Service Dominant Logic (SD-logic) are two perspectives in marketing which have garnered interest recently. According to Grönroos and Gummerus (2014, p. 206) "SL has two major implications for marketing: first, in some circumstances, service providers have an opportunity to engage with the customers and co-create with them. Second, as a consequence of this first implication, the service

provider is not restricted to offering value proportions only but also can directly and actively influence customer's value fulfilment in some situations". This indicates the importance of the customer as a major and important part in the co-creation of service in SL. In order to shape offerings in accordance with customers' demands, co-creation with the customer can provide useful knowledge. The knowledge can in turn generate value co-creation that creates value to customers.

The core of SD-logic is the exchange of service and it can be seen as a service-for-service relation between and among actors (Vargo & Lusch, 2004; Vargo, Maglio, & Akaka, 2008). Hence, the actors are of importance in the value creation as it occurs in networks where interactions between different parts are given opportunities to interact with each other. In the last few years, the SD-logic discourse has moved toward a view where value co-creation is conducted and coordinated through institutions where symbols, norms, and other heuristics are shared and thereby play a major role. This added view points towards a dynamic system orientation where service is integrated in the exchange processes (Lusch & Vargo, 2014; Vargo & Lusch, 2016). Grönroos and Gummerus (2014, p. 207) discuss and propose ten different managerial principles based on SL in marketing for value co-creation (table 1). The ten principles are based on and developed from previous work by Grönroos and Ravald (2011), Grönroos (2011), and Grönroos and Voima (2013).

Table 1. Ten managerial principles based on SL for marketing (Grönroos & Gummerus, 2014, p. 207)

(1) in a value generation sphere closed to the service provider (a customer sphere), customers, or any user, create value in the form of value-in-use, emerging out of or being created from integrating new resources with existing resources and applying previously held knowledge and skills;
(2) value (as value-in-use) evolves in a cumulative process, or is sometimes destroyed, throughout the customer's value-creating process;
(3) value (as value-in-use) is uniquely, experientially and contextually perceived and determined by customers;
(4) firms as service providers are fundamentally value facilitators in a value generation sphere closed to the customer (a provider sphere), such that they develop and provide potential value-in-use for customers and other users;
(5) if a platform of co-creation exists or can be established through direct interactions among actors in the value generation process, the service provider can engage with customers' value creation, and opportunities for co-creation of value among actors arise;
(6) between the customers and individuals in their ecosystem, social value co-creational activities that influence the customers' independent value creation process may take place;
(7) service is the use of resources in a way that supports customers' everyday practices – physical, mental, virtual, possessive – and thereby facilitate their value creation;
(8) the goal of marketing is to engage the service provider with customers' processes to enable reciprocal value creation among the actors, with service as a facilitator;
(9) as service providers, firms are not restricted to making promises through value propositions; and
(10) in direct interactions, using a platform of co-creation, through interactive marketing, firms as service providers can directly and actively influence customers' value fulfilment and thereby keep promises made, as well as contribute to the establishment and maintenance of customer relationships, marketing is extended beyond a predominantly promise making function."

The ten principles (table 1) summarise managerial factors on SL for marketing. The aspects show the value generation for business and marketing and it includes the customer as a co-creator. In the process, values emerge in a cumulative way as the customer plays an important role along the process given that the value is both determined and created by the customer. The co-creation is a process where the creation evolves in the interaction between different actors where the service provider, the developer and the customer play a major part. However, the process could evolve in an opposite and for the service provider negative direction if the customers do not react in a value-creative way. The value is determined by the customer due to how the customer perceives the value offered. As different customers can perceive the value in difference ways, it can make the experience of the value unique to customers. Engaging and involving

the customer in marketing can play an important role in raising the attention of the service provider and interest in the value proposition.

As mentioned, SL and SD-logic are strongly related to each other and according to Grönroos and Gummerus (2014) there are some similarities and differences. Both concepts pinpoint the importance of service and the interface between customers and service providers. Hence, the agreement between the parts is fundamental and crucial and therefore constitutes the core of service. According to Gummesson (1995) both SL and SD-logic are based on a customer perspective as the customer takes advantage of services that in a physical, mental or virtual way creates and generates value to them. Vargo and Lusch (2008a, p. 9) describe their view on SD-logic with "Our characterization of a generalized S-D logic is that it is a mindset, a lens through which to look at social and economic exchange phenomena so they can potentially be seen more clearly". This indicates that SD-logic, within social and economic exchange, provide a foundation for understanding and developing service and enrich the field of marketing in general and service marketing in particular. When developing and providing DWSs it is important to keep in mind that the core of service lies in the interaction with the customer. Hence, the digital servicescape with its interface is important as it is there the customer interacts with and benefits from what the DWS provider offers.

1.7.2. Digitalisation of service

Regarding digitalisation, McLuhan and Nevitt (1972, p. 49) anticipated that "The ground has changed drastically at present. The computer is a potent of the return to Carlyle's medieval ideal of the cottage economy, when large enterprises can be run from a kitchen, as it were". They predicted that with the development of new electronic technology the boundary between consumer and producer will blur, thereby consumers will increasingly assume the role of co-producer. Toffler (1981) developed similar thoughts and introduced the term "prosumer" where the line between producer and consumer will be more blurred and where the different sides will not be as obvious as when the producer produces goods and the consumer consumes what the producer offers. However, with an increasingly blurred order between producer and consumer where computers are involved, McLuhan and Nevitt (1972, p. 109) claim that "Computers can do better than ever what needn't be done at all. Making sense is still a human monopoly".

Cöster and Westelius (2016) argue that the search for more compact and efficient computers during the 1970s led to the development of personal computers. This opened the way towards a market for personal computers, as well as for service offerings to consumers. In addition to this, more and more people got access to computers as a tool in their daily work, which led to a demand for more accessible computers. This in turn created

a demand for portable computers, and when computers, whether stationary or portable, became connected to each other in networks, true digitalisation began to emerge. What is today referred to as the Internet began to develop in the 1960s, took off in the 1980s and finally went mainstream in the 1990s and today it is also known as the World Wide Web.

Digitalisation made it possible to communicate and provide various services regardless of borders between regions or countries and the distance between providers and users and opened up for co-creation through digital devices. Brynjolfsson and Saunders (2009, p. 109) discuss how IT affects economy and they argue that "The technologies behind the products that have made life easier, safer, healthier, or more comfortable are of tremendous value to society but are not counted in government measures". The authors claim that the surplus for the consumer is the cumulative net profit they obtain from using a service or a good after withdrawing the price paid. They state that IT innovations have provided billions or even trillions of dollars to the economy, but it is very difficult to measure this and therefore it is impossible to give an exact figure. Their statement gives a view of how the value of IT solutions is difficult to estimate and value, but at the same time it gives a clear indication that there are great values for the benefit of society, businesses and not least consumers. Grönroos and Voima (2013) discuss value co-creation in terms of service and argue that co-creation is a function of interaction. In response to these two authors, Lenka, Parida, Rönnberg Sjödin, and Wincent (2016) take as a basis for their research and state that the key finding in their research is that digitalisation makes it possible to increase the interaction between resources and processes of on the one hand the provider, and on the other hand the customer and that both parts thereby can achieve co-creation value. However, research has shown, that users' information search behaviour on the Internet can cause trouble for the provider if a site does not catch people's attention they tend to leave the site after just a moment which in some cases is only a few seconds (Belch & Belch, 2017; Caesarius & Hohenthal, 2016; Evans, Jamal, & Foxall, 2009; Knight et al., 2017). In addition it can be highlighted that searching for information on the Internet can influence people's lives as it can cause reduced capacity for sustained attention and influence their cognitive reflection (Vujic, 2017). Hence, Kennedy (2011) claims that this may make people stupid.

Digital services are supported through the infrastructure of an ecosystem (further presented in chapter 3). An ecosystem fulfils the conceptual framework of a network of interconnecting and interacting parts (Alves, Oliveira, & Jansen, 2018) or of general systems theory (Bertalanffy, 1950). In general systems theory, functionality is a core property of hierarchic multilevel systems with a structure that is adaptive to and in cooperation with the context (Bertalanffy, 1950; Mesarovic,

1960). Bertalanffy (1950, p. 32) states "Models, principles, and laws that apply to generalized systems or their subclasses, irrespective of their particular kind, the nature of their component elements, and the relationships or 'forces' between them". This applies to an ecosystem for digital wellness services, where the central mechanisms are synergies and division of labour so that the ecosystem can benefit from the skills of the developers, the implementers, the distributors and the users of the digital wellness services through the relationships that operate between them. In addition, the young elderly (the users) access help through digital wellness services to reach and maintain wellness (which is "goal seeking behaviour" in systems theory terms). Skyttner (2001, pp. 49-50) summarises systems theory with the following list: i) interrelationship and interdependence of objects and their attributes, ii) holism, iii) goal seeking, iv) transformation process, v) inputs and outputs, vi) entropy, vii) regulation, viii) hierarchy, ix), differentiation, and x) equifinality and multifinality. We can apply this list to an ecosystem description and will then note that: ii) holism is information system, routines and people using them, and v) inputs and outputs constitute the information the user puts in and the feedback, insight and support provided in return that can be defined as a system or network of interconnecting and interacting parts (Alves et al., 2018).

In order to describe how service in general and DWSs in particular can be related to a digital servicescape, it is of interest to connect it to the physical, intellectual, social, and emotional wellness dimensions (figure 4). In a digital servicescape, designed to enable physical wellness, apps can developed and designed for many purposes, such as training, sleeping, measuring blood pressure and heartbeat. The apps provide information to the user and can, in some cases, also encourage physical training by sending a reminder to the user or by showing how the users' fitness has developed over a certain period of time. Intellectual wellness can be strengthened by providing the user with apps that encourage training of the brain. This can be achieved through apps providing for example, pod radios, listening to music / e-books, learning foreign languages, playing Sudoku, and solving crosswords. Regarding social wellness, apps for communicating, dating, making appointments, and providing services that enhance personal security and safety can be found. Finally, when it comes to emotional wellness there are apps providing for example opportunities for the user to show emotions like happiness, sadness, loneliness, love and empathy with other people's feelings. Figure 4 visualises the relation between a digital servicescape where DWSs are provided and the wellness dimensions. The wellness dimensions can in turn be met with apps in order to support young elderly's needs. However, it must be emphasised that an app developed to encourage, for instance, training, can also lead to a positive effect on other wellness dimensions. Therefore, it is important to look at the whole picture and not just at individual wellness parts.

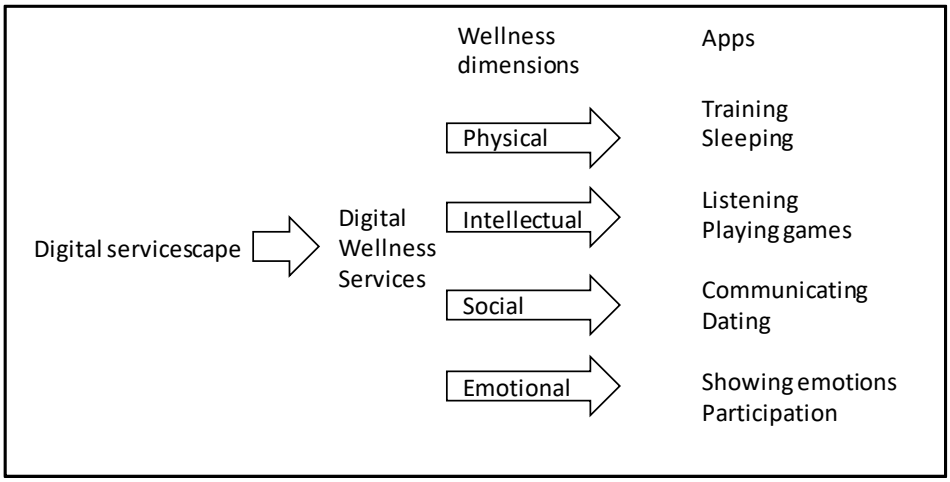


Figure 4. Digital wellness dimensions within a digital servicescape

When developing DWSs the wellness dimensions are important to take into account, as they will be crucial attracting the interest of the customers when they enter the digital servicescape. If the digital servicescape is not designed in a way that meets the expectations of the customer, the risk is great that the customer rejects the DWS offered. Chiu and Hu (2015) argue that well-designed app technology can be beneficial to what they describe as older adults as it can strengthen their physical and psychological well-being and in addition they claim that it can be a cost-effective way to achieve this. According to Platt, Outlay, Sarkar, and Karnes (2015) wellness apps are an important and promising tool to help people to maintain good health, to decrease human suffering and in parallel decrease costs for healthcare.

In line with Schein's (1985) concept, a digital servicescape can be seen as something young elderly can utilise and it can therefore be regarded as values or artefacts. However, a digital servicescape for young people, when they exploit it, is more an assumption. To this view can be added what Hevner et al. (2004) claim when they argue that within IS research common effort is put into developing new innovative artefacts. In addition Krippendorff (2006, p. 78) claims that interfaces are artefacts as they can be perceived ubiquitously and they have become subjects of design and "Today, the interface has become the prototypical artefact of the post-industrial era". This indicates that artefacts, when they are presented in the digital servicescape, with the intention to add values to people and where the values can later become taken for granted and thereby will be regarded as assumption. One example of this is the development of digital banking services on the web that only recently were considered innovative but are now commonplace. This can also create anger and frustration when these services do not work and such failures become headline news.

1.8. Wellness, wellness routines, and wellness services

León et al. (2016, p. 1) discuss wellness and claim that "Wellness is a term often used to talk about optimal health as "dynamic balance of physical, emotional, social, spiritual, and intellectual health.", and in addition they discuss digital wellness from physical and mental perspectives and argue that it incorporates all aspects of individuals' wellbeing in terms of information technologies. According to Smith Maguire (2007) wellness aims to offer and achieve a better life, including a life in balance. A group that seems to face problems are some of those who are in their early 60s and have retired (Rohwedder & Willis, 2010). The authors claim that early retirement has a major negative influence on their cognitive ability.

UCR (2017) highlights seven dimensions including social wellness, emotional wellness, spiritual wellness, environmental wellness, occupational wellness, intellectual wellness, and physical wellness. To these seven (Fuleihan, 2016) adds the dimensions of financial and creative wellness. This gives the impression that there are several alternative suggestions of what dimensions there are and how they should be defined. However in research about older people and the change over time they experience in terms of functionality limitations, the focus is often on physical, intellectual, social and emotional wellness dimensions and some examples of how researchers focus on one or several of these dimensions can be found in Lam et al. (2009); Shin (2016); Yu, An, and Kang (2013). Since this thesis is about young elderly, focus will be on physical, intellectual, social and emotional wellness dimensions.

Ferrand, Martinent, and Bonnefoy (2014) studied a group of people aged 70 and upwards and state that motivational factors (e.g. health, body shape, control weight, and physical appearance) are important to get people to exercise and thereby gain a healthier life. Their findings are supported by previous research of Kuvaja-Köllner, Valtonen, Komulainen, Hassinen, and Rauramaa (2013); McAuley, Elavsky, Jerome, Konopack, and Marquez (2005). Carlsson and Walden (2015, p. 1) discuss digital services shaped for wellness routines and state "The design of wellness services needs to be with the young elderly, not for the young elderly". What Carlsson and Walden (2015) argue indicates a need for finding ways to develop and co-create DWSs together with the young elderly.

Development and co-creation are on the one hand of interest to the stakeholders who have an interest in providing DWSs, and on the other hand to the individuals among the young elderly as stakeholders who could find the DWSs useful. Stakeholders can be described in several ways and the concept has been traced to the 1930s and Barnard and Follet. In the 1960s attention was put on companies and their environment and due to the term stakeholders also came into consideration (Aldrich, 1979; Anderson, Havila, & Nilsson, 2013; Cyert & March, 1963; Levitt, 1962). Freeman (1984) focused on defining stakeholders with a strategic

management perspective and the interaction between companies. Later he (Freeman, 2010) defined stakeholders as parties which involve internal as well as external parties to a company and which includes its employees, managers, the government, suppliers, and customers. Although there are several parties that can be seen as stakeholders Lepak, Smith, and Taylor (2007); Normann and Ramírez (1994) stated that the seller and the buyer are the key stakeholders in a value creation and in the process of adding values to stakeholders. According to (Fonstad & Robertson, 2006; Maes, Van Grembergen, & De Haes, 2014) it is of importance to see stakeholders as an integral part of doing business. They claim that although a lot of research has been put into the field, no one can state how many stakeholders should be involved to achieve the best outcome in business.

Three main stakeholders have an important impact on the ecosystem within DWSs. The first two of the three are the DWS developers and providers which are companies forming business ecosystems in order to make profit by providing DWSs. This group includes those who for example work with the development of software and hardware, design, implementation, infrastructure, and maintenance. The third main stakeholder are the young elderly who want to improve their wellness and thereby gain a better, longer, more healthy and eventful life and avoid illness and becoming dependent on support and help of family, friends and society. In addition, this points to other stakeholders such as family, friends and society. It is in the interest of family and friends that the young elderly are in good shape so they can live the life they want to and without being dependent on others. It is also in the interests of society that the young elderly are and continue to be in good health as it reduces the need for healthcare and assistance and thus costs can be kept down. The stakeholders, as shown, may have different goals and objectives with DWSs. However, they have one important issue in common: they can all benefit from co-operation as the young elderly can gain wellness, the developers and providers can make a profit and the society can save money. This points towards a profitable opportunity in terms of doing business in combination with DWSs.

Regarding the combination of wellness and business, Pilzer (2007, pp. x-xi) claims that wellness entrepreneurs will be the next millionaires. He argues that the changes in economy and technology will open for wealth and health which he means even Karl Marx could stand up for "But even Marx couldn't have fathomed what is happening today – for we are not taking from the rich and giving it to the poor, we are creating new health in which everyone who chooses to can share". This can be interpreted as services provided within health and wellness can be for everyone, whether poor or rich. It is worth noting that when Pilzer wrote the book, smartphones with their apps (e.g. apps for fitness, health and wellness) and fitness bracelets were about to be introduced on the market.

To sum up section 1.7 and 1.8 the two areas of service and wellness are characterised by the following:

- Services appear by interaction between providers and users.
- Digital services are delivered in digital servicescapes, which form a part of servicescapes.
- Co-creation creates opportunities to influence, develop and enhance values to services.
- Wellness as a concept includes multiple dimensions.
- Wellness involves several stakeholders.

1.9. Digital wellness services for young elderly

Motivation, behaviour, diffusion of innovations, adoption process, and eHealth are factors that influence the young elderly generation's attitudes to wellness services. Hence, these areas are of importance regarding developing and providing DWSs to young elderly and will be presented below.

The definition of wellness evolved over time and is strongly linked to health. The World Health Organization (WHO, 1946) states that "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". In addition, what Dunn (1959, p. 447) defined as wellness has to be highlighted when he states "High-level of wellness for the individual is defined as an integrated method of functioning which is oriented toward maximizing the potential of which the individual is capable, within the environment where he is functioning". Corbin and Pangrazi (2001, p. 3) adapted the work of Bouchard (1990) on wellness and they state that "Wellness is a multidimensional state of being describing the existence of positive health in an individual as exemplified by quality of life and a sense of well-being". Here, DWSs can provide a good way of enabling young elderly to achieve wellness, thereby raising their quality of life.

Hettler (1976) developed a six-dimensional model of wellness containing social, intellectual, spiritual, physical, emotional, and occupational aspects. Later, together with the researchers Hattie, Myers, and Sweeney (2004), he added environmental as a seventh dimension. Although the dimensions are on a general context, they are of interest regarding young elderly and their wellness. He (Hettler, 1976) claims that wellness is an ongoing process where the dimensions interact with each other and shape a holistic picture of an individual. In addition, Roscoe (2009) discusses eight components of wellness theory models and she argues that social, emotional, physical, intellectual, spiritual, psychological, occupational, and environmental are of interest. Strout and Howard (2015) discuss five dimensions; social wellness, intellectual wellness, physical wellness, emotional wellness, and spiritual wellness, based on the

six dimensions proposed by Hettler (1976) and they argue that for adults over 60 years of age, social wellness is to be able to form and sustain constructive personal and community relationships. Intellectual wellness is to continue to learn and willingness to develop skills and knowledge. Physical wellness is about participation in physical activities and a conscious decision to eat healthy food. Emotional wellness is a willingness to make decisions and to take responsibility for the outcome, and finally, spiritual wellness is to appreciate values, experiences and to find a meaningful life. As shown, there are several ways to define which dimensions best describe what is included in wellness. Well-designed DWSs can have a positive impact on all of the dimensions, no matter how they are defined or divided. However, it must be noted that this thesis has an overall approach and is not focused on a particular dimension.

1.9.1. Holistic wellness

According to Copeland (2002); Johnson (1986) and (Swarbrick, 2006) wellness is holistic and multi-dimensional. They state that it includes a lifestyle of health habits that involves physical, emotional, intellectual, social, environmental, and spiritual dimensions. In a study Foster, Galjour, and Spengel (2015) examined how older adults, defined as beginning at the age of 60, perceived holistic wellness. In their work they use the four-factor solution containing optimism, existential despair, physical, and family/friends proposed by Foster and Levitov (2012). Optimism is about a positive attitude towards life and existential despair deals with a more negative outlook to life. Physical focuses on individuals' perceptions of their health at present, in the past, and in the future, and finally Family/Friends deals with relationships to family and friends. During the work Foster et al. (2015) relabelled the factors and named them: existential success, existential despair, physical wellness, and future physical wellness. They conclude their findings by arguing that in order to meet the demand for wellness for the group of older adults, based on the four factors, the need for advisory services will rise. In addition, they plead for a holistic view on wellness to customise services in order to shape offers optimally for the older adults. The subjects of the four factors are connected to what Troutman, Nies, Small, and Bates (2011) term as the concept of successful aging. The idea deals with a multidimensional concept involving physical and psychological health, social relations, intellectual capacity, mental growth, and a meaning in ageing.

The older people get the more time people tend to spend in their homes, and Adam (2003) argues that this creates a demand for healthier homes. Her research focuses on elderly people in England and she claims that a healthier home can provide a healthier life and it involves everything from small issues like securing carpets, to large things like heating, and visits from service workers. In addition, she claims there is a risk that

professionals and volunteers visit older people, but they sometimes do not see or pay attention to the conditions some elderly people live under. She (Adam, 2003, p. 25) states that it is important to "enable older people to live in their homes for as long as they wish". Therefore, innovation, development, and support are crucial to facilitate this for the elderly. Hence, well-designed DWSs can play an important role to facilitate this for them and thereby increase the possibility of increased wellness. In addition, it must be mentioned that the holistic wellness approach is in line with this thesis as an overall phenomenon with young elderly and DWSs.

1.9.2. A long healthy life

Marklund (2016a, 2017) discusses how to live a long healthy life. Regarding life expectancy, he refers to studies showing that 10 percent is genetically determined and 90 percent is determined by individual lifestyle choices. Hence, he argues that the focus has to be on how to help people make the right choices for a long healthy life. He claims that the important question to answer is why people should change lifestyle towards a healthier path. The answer is that it could lead to a further 10 years to live, but not only a longer life, but a healthier one too.

Ståhlberg (2017) describes that it is important to adjust the training according to how old one is. She says that it is not a good idea to exercise the same way as when you were younger when you grow older. This is because the muscle mass decreases, the skeleton has declined in strength, and the fat deposits change with increasing age. Therefore, it is important to tailor the training based on the individual's age and conditions. Cuthbertson and Bowden Davies (2017) claim that only 2 weeks of inactivity could lead to increased risk of developing diseases. They have studied a group of young healthy people with a mean age of 25. The group who normally were active with at least 10,000 steps a day were given the instruction to reduce the number of steps to maximum 1,500 a day. The study was conducted by using SenseWear bracelets and the participants were under constant medical supervision to ensure their safety and the outcome of the study. The researchers state that after just 14 days it was observed that the participants had in a negative way gained significant influence on the body composition, including increasing body fat and loss of skeletal muscle mass. Hence, this could lead towards chronic metabolic disease and premature mortality. In addition, Benka Wallén et al. (2014) state in their research on a group of individuals between the ages of 65 to 84 years old showing that physical activity leads to healthier aging, reduced illness, and higher quality of life. They point out that it can also lead to financial benefits through reduced health care burdens.

Curtis et al. (2017, pp. 375-381) discuss what increased physical activity could bring and they claim that "Increased physical activity level and exercise as well as decreased leisure time, show a consistent benefit in

the prevention of cardiovascular disease and mortality". Hellénius and Sundberg (2011) show in their research that inactive lifestyle is a hazardous modern health threat and therefore physical activity is crucial for longevity and health. The authors (2011, p. 158) claim that "Over recent years, 'physical activity on prescription' has proven to be a feasible way to increase an individual's or patient's physical activity levels". What they emphasise is based on the findings of researchers like Elley et al. (2011); Grandes et al. (2009); Kallings, Johnson, et al. (2009); Kallings, Leijon, Kowalski, Hellénius, and Ståhle (2009); Lawton et al. (2008). In addition it must be noted that according to Pojednic et al. (2017) physicians with a deep interest in physical activity discussed the topic more often with their patients than those physicians who had little or no interest in physical activities.

People who want a long healthy life have to be aware that a major threat to their health is some form of inflammation in the body and people's lifestyle has according to Marklund (2016a, 2017) a huge influence on how great the risk will be. To explain and clarify how people's lifestyle affects their lives it is important to state that an inflammation can occur in different ways, but mostly it is due to the presence of free radicals. When the oxygen we breathe is transported from the lungs to the cells that in turn use it for providing energy to the various ongoing processes in the body, a by-product, free radicals, is produced. The body needs some of these free radicals but if an individual has an unhealthy lifestyle too many will be produced and this in turn causes inflammation and this constitutes a great danger to health. The older people get, the more visible the damage of the free radicals will be. This by extension shortens the lives of people and therefore is a basis to inform and influence people towards a healthier lifestyle direction. Therefore, this constitutes an important basis for composing and offering DWSs tailored for young elderly. Hence, the importance of developing DWSs to increase the probability of the young elderly achieving a long healthy life.

1.9.3. Impact of digital wellness services for young elderly

DWSs for young elderly can make a positive impact on their health and thereby increase their wellness. Hence there is a need for developing DWSs for the group of young elderly (Carlsson & Walden, 2015). In a conversation with Professor of Medicine Bertil Marklund (2016b) who is also the author of the book *The Nordic guide to living 10 years longer*, he argued for the importance of a holistic view on wellness. He claimed that there is not only one factor affecting people's wellness, it is rather a combination of different factors and here DWSs can play an important part to activate people. In addition, he highlighted the importance of people exercising both body and brain, and this is particularly crucial for older

people. If not, there is an increasing risk for illness or, even worse, premature death.

Bagwell (2016) discusses wellness and services in connection with gerontology, the study of social, cultural, psychological, cognitive, and biological aspects of aging, and put forward the importance of assistive technology where assistive devices and apps can decrease older or infirm people's need for help and assistance. Some researchers have focused on older technologies such as television but combined with more modern interaction opportunities. Baptista et al. (2013) propose the use of digital interactive television for marketing health care and wellness to people in general and the elderly in particular. They emphasise three key aspects of the role that interactive television could play in wellness and healthcare. Firstly, to inform, secondly, to facilitate communication between users and providers, and thirdly, to enable the availability and mobility conditions. Their research demonstrates that digital interactive television can contribute to delivering healthcare and enabling people to take care of their health themselves and this without even leaving home. In addition, they state that when it comes to digital health services it is crucial that apps are free of charge.

Altogether, the thesis strives towards enabling young elderly to make the aging process more enjoyable. Being in good condition means a long, healthy and eventful life for them. From what is described in this section, there is a possible difference between what is required for young elderly to benefit from and what is offered by DWSs. The DWSs can be beneficiary to the young elderly and play a valuable role in providing them with services for a better everyday life.

To sum up, section 1.9, well-designed DWSs can lead to the following for young elderly:

- Improve the likelihood of achieving wellness.
- Help them gain a long healthy life.
- Exercise both body and brain.

1.10. Research purpose and goal

In this thesis, I will propose and work out arguments that wellness can be formed and maintained with DWSs. The concept digital servicescape will be introduced for an environment in which it is easy, effective and efficient: i) to access and use DWSs, ii) to develop and enhance the use of them, and iii) to sustain the use of the services for extended periods of time. The DWSs are services provided in a digital environment including the Internet, websites, and cloud services, and are provided through devices such as smartphones, bracelets, and tablets. The focus for the work on DWSs will be the age group 60-75, which I call the young elderly.

As the foundation in this thesis lies in proposing and working out arguments for providing DWSs aimed at the group of young elderly this section focuses on the purpose and research goal for the thesis. So far, this thesis has presented a general description of how motivation, behaviour, diffusion of innovations, adoption process, and eHealth influence the young elderly generation. Thereafter, focus was on the young elderly's application of services, servicescape, digital servicescape, wellness, wellness routines, and wellness services. The previous general and focus parts lead to different aspects of DWSs for young elderly.

The general description of young elderly's use of DWSs from motivation, behaviour, diffusion of innovations, adoption process, and eHealth are:

- Motivation is an important factor for the adoption of and adaptation to DWSs.
- Behaviour is dependent on several factors, which should be considered when developing and providing DWSs.
- The willingness of young elderly to adopt innovations.
- The buyer decision process is of importance.
- eHealth is the use of digital devices and services in health perspectives.

The above influence the young elderly generation as:

- They grew up in the aftermath after two world wars, where the west and the east blocs dominated the world on either side of the iron curtain.
- They belong to a generation affected by strong financial development, major advances in health care, social security, equal rights, women´s liberation, and strong civic involvement.
- Digital devices and digital services have been developed and added to their lives, i.e. they are not digitally fluent.

For the young elderly the above apply to the two areas of service and wellness:

- Services appear in the interaction between providers and users.
- Digital services are delivered in digital servicescapes, which form a part of servicescapes.
- Co-creation creates opportunities to influence, develop and enhance values to services.
- Wellness as a concept that includes multiple dimensions.
- Wellness involves several stakeholders.

In order to achieve wellness for young elderly this demands:

- Well-designed DWSs can improve the likelihood of achieving wellness.
- Well-designed DWSs can contribute to living a long healthy life.
- Well-designed DWSs can exercise both body and brain.

The research goal for this thesis is to work out the design of a digital servicescape for DWSs for young elderly so that the services will meet their needs and demands.

1.10.1. Areas of interest

The feeling of inadequacy that my parents and even I felt with digital devices formed the embryo of my interest in developing knowledge about DWSs for the young elderly. Figure 5 shows the initial thoughts on how the thesis would appear in a field where wellness services, servicescape, and digital servicescape meet. In addition, the figure shows the digital servicescape as a subset to the servicescape.

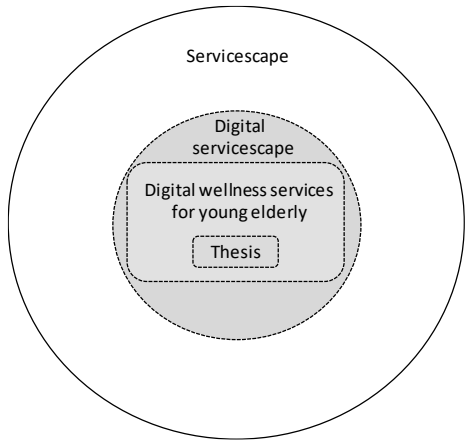


Figure 5. The thesis' context in connection to servicescape, digital servicescape, and DWSs for young elderly

The five original research papers and the thesis have provided some areas of particular interest. Questions have been raised about trust and resistance to DWSs provided in a digital servicescape. People´s willingness to adopt and adapt to DWSs has been in focus. Other questions were if, and if so, why there are differences in how ready people are to use different kinds of service providers' offerings and what influences this such as brand, marketing, and reputation. Questions were also raised about digital customisation, digital guidance, and co-creation for developing, maintaining, and using DWSs within the digital servicescape. Some questions dealt with people's wellness and if they were prepared to help a

fellow person and to accept help when they themselves are in need of help. The digital servicescape appears where the young elderly meet the offerings from, for example DWS providers. Hence, the wellness service provider and the young elderly are connected in the digital servicescape.

The original research papers (henceforth P) present different approaches in the use of DWS. P1 (Allmér & Råberg, 2013) and P2 (Råberg & Allmér, 2013) focus on young elderly's use of digital devices and digital services and their interest in sharing information. P3 (Allmér, 2014) highlights possibilities and limitations of the digital servicescape. P4 (Allmér & Marcusson, 2018) focuses on young elderly's needs and demands on DWS and digital servicescape. Finally, P5 (Allmér, 2018) is about digital servicescape for DWS.

1.10.2. Overall research question

The research question appears where IS and marketing, with focus on DWSs, meet the young elderly. The theoretical foundation lies in contributions from scientific work from both IS and marketing research. However, contributions from other fields have also been useful.

The purpose and research goal of the thesis is addressing how to enhance the opportunities for young elderly to enable them to benefit from DWSs offered in order to gain a long, healthy and eventful life. In addition, the purpose and research goal are to provide DWSs providers and developers with insights on what is needed to enable the young elderly to benefit from DWSs offered.

If young elderly follow recommendations to adopt DWSs, these will benefit them in terms of healthier aging, reduced ill health, and higher quality of life. For developers and providers it will open up for business opportunities if they understand the needs and demands of the young elderly. In addition, it can contribute to significant health, social, and economical benefits for society. Proactive wellness programs for young elderly will have cumulative effects on the prerequisites for good health. DWSs require an ecosystem of stakeholders to develop, distribute, maintain, support, and further develop the services. A servicescape offers the conceptual basis for the ecosystem to form, evolve, and survive. Digital servicescapes offer platforms on which it is easy, effective, and productive to access and use DWSs, to develop and enhance the use of them and to sustain the use of the services sufficiently to achieve health effects.

The research question in this thesis is:

How can a digital servicescape enhance young elderly's use of Digital Wellness Services (DWSs)?

The research question spans an extensive area and in order to get a more focused research process some details must be raised as focus research questions:

- *How can a DWSs ecosystem with a digital servicescape be described?*
- *Which stakeholders are involved in a digital servicescape?*
- *What are the key elements of a model of a digital servicescape?*
- *How can a program for digital servicescape be formed?*
- *Who can benefit from DWSs?*

1.10.3. Research questions of the original research papers

Figure 6 presents an overview of how the original research papers relate to each other. It shows that P1, P2, and P5 focused on the group of young elderly and P3, P4, and P5 focused on servicescape and digital servicescape.

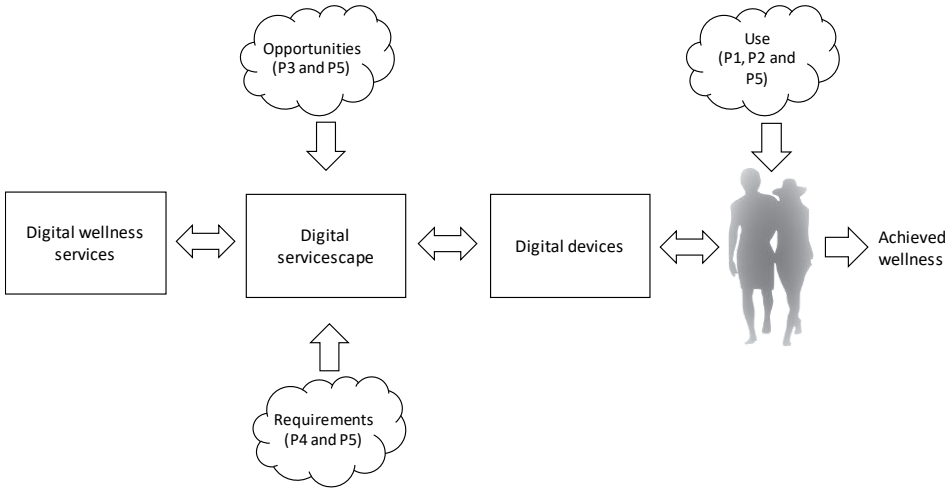


Figure 6. Research papers (P1, P2, P3, P4, and P5) connected to the field of interest

The research questions (henceforth RQ) in the five original research papers are:

Paper 1, Young-elderly and digital use (2013)

- RQ. What is required to capture the attention of young-elderly and to get them interested in the use of digital services?

The findings highlight three issues of importance: i) servicescape – the interface on digital devices, ii) trust – who is responsible for the digital services, and iii) credibility – customer familiarity with service providers are of importance.

Paper 2, Young-elderly and digital services (2013)

- RQ1. How does the group of young-elderly utilize digital services?

The findings highlight that the young elderly utilize digital services. However, they experience anxiety and feel reluctant to try digital services.

- RQ2. What conditions are necessary in order to motivate young-elderly to use digital services?

The findings highlight a demand of the young elderly regarding servicescape design. They emphasise that trust is important and put forward a demand for guidance and customisation.

Paper 3, E-servicescape is plausible (2014)

- RQ. What are the differences and the similarities between servicescape and e-servicescape?

The findings highlight that there are both differences and similarities between a servicescape and an e-servicescape. This research shows that what is fully possible in a servicescape is fully possible or at least plausible in an e-servicescape.

Paper 4, Altruistic young elderly in Sweden – a pilot study (2018)

- RQ1. What are the aims and objectives for giving support to needy fellow citizens?

The findings highlight that helping each other, solidarity, and living healthily are important objectives.

- RQ2. What is the context for the benefactor?

The findings highlight that the context is about place, type of support, and how to connect.

- RQ3. How can the support be designed and worked out?

The findings highlight that it is up to both the benefactor and the beneficiary, as well as a possible intermediary, to determine the design and how it should be worked out.

- RQ4. What expectancies and motivations do the young elderly benefactors have?

The findings highlight the motivation as self-satisfaction by helping someone in need of support and that the expected reward is just a thank you or a cup of coffee.

- RQ5. How can a model explain the support situation?

The findings highlight expectancy and motivation in combination with context, reward, and trust. These five key elements visualise a situation where a benefactor and a beneficiary meet.

Paper 5, Digital wellness services´ servicescape for young elderly (2018)

- RQ1. What demands and needs are required from young elderly as customers of DWSs?

The findings highlight the needs and requirements of the target group where a program for DWSs' servicescape is proposed.

- RQ2. What should providers consider when offering DWSs to young elderly?

The findings highlight the needs and demands of the target group and they are brought together in a DWSs' servicescape program, where important issues for the providers to consider are presented. In addition, the model also presents important issues for developers and the young elderly to consider.

Notable is that P4 (RQ 1, 2, 3 and 5) and P5 (RQ 2) can possibly be regarded as outside the scope of the thesis as it is presented above. However, they provide information and insights on how young elderly think about and use DWSs.

The original research papers RQs are connected to the thesis research question and to the focused research questions (table 2).

Table 2. Research questions connections

Paper	RQ	Focused research question				
		1	2	3	4	5
P1	1		X	x	X	X
P2	1			X	X	
	2			x	X	X
P3	1	X				
P4	1					x
	2		x			
	3				x	
	4					X
	5			x	x	
P5	1				x	X
	2				x	

Note: X = strong connection, x = week connection

In this section, the answers to the research questions in the original research papers have been briefly presented. However, they will be further presented and discussed in chapter 4.

1.10.4. Order of the chapters in the thesis

With the intention of facilitating continued reading, this section describes the order of the coming chapters (table 3). After completing the introductory chapter where various aspects of young elderly were in focus, the next chapter discusses the methodology, and different aspects of the research conducted are highlighted. Then, in chapter 3, DWSs and young elderly are discussed where the work of others is in focus. Thereafter, in chapter 4, the findings from the five papers and the six studies are highlighted. Finally, in the fifth chapter, conclusions are drawn and implications for practise and further research are presented.

Table 3. Order of the chapters in the thesis

Chapter	Title	Comments
1	Introduction	
2	Methodology	Includes study 1 – 6 and thesis
3	Digital wellness services and young elderly	
4	Findings and discussion	Paper 1 – 5
5	Conclusions	

2. Methodology

"Help"
- The Beatles -

The introduction presented different approaches that influence the young elderly's capabilities and willingness to benefit from DWS. In this section of the thesis, different research methods used during the research are presented in order to help to gain insights, as well as to inspire. In addition, knowledge, theories and methods that may support and guide researchers are presented and discussed. This section covers the following topics: focus group, survey, literature review, ethics and morality in scientific work, discussion and criticism of the methodological approach and finally, summary.

The chapter focuses on methods used and considered in the work on the six studies, namely the five papers and this summary.

2.1. The study's context and methodological approach

In order to enable the young elderly to benefit from DWSs, it is important to have a methodological approach. If young elderly follow recommendations to apply wellness services, these will benefit them in terms of healthier aging, reduced ill health, and higher quality of life. For developers and providers understanding the needs and demands of the young elderly will open up business opportunities. In addition, it can contribute to significant health, social, and economical benefits for society in general. Proactive wellness programs for young elderly will have cumulative effects on the conditions for good health. DWSs require an ecosystem of stakeholders to develop, distribute, maintain, support, and further develop the services. A servicescape offers the conceptual basis for the ecosystem to form, evolve, and survive. Digital servicescapes offer platforms on which it is easy, effective, and productive to access and use DWSs, to develop and enhance the use of them and to sustain the use of the services sufficiently to achieve health effects. In order to find answers and solutions to this, research needs to be conducted. Systematic research requires a firm and relevant methodological basis, and this is developed in section 2.1.2.

The work on this thesis was carried out in an explorative way (figure 7). The starting point was to study young elderly's use of digital devices and digital services (P1 and P2). The second step was to study digital servicescape (P3), which was followed by the third step studying young elderly's demands on wellness services (P4). Finally, servicescape for DWSs context model was provided and a program was developed (P5).

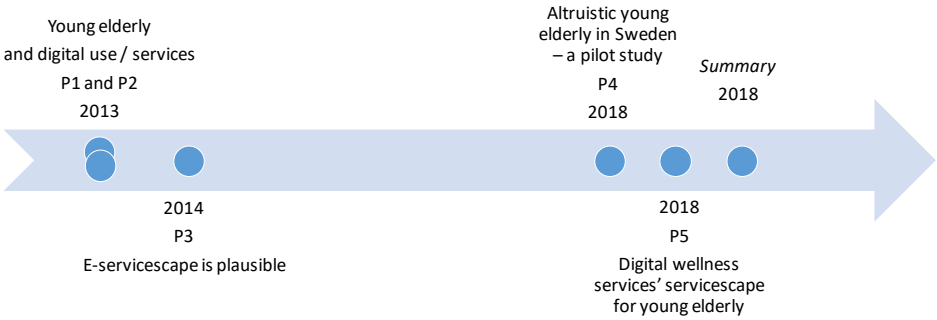


Figure 7. This thesis explorative journey

Having highlighted the explorative journey, the next section will present the context.

2.1.1. Context

Initially, it was in the context of my own frustration, as a practitioner and lecturer in marketing, when I realised that many people were unable to benefit from digital services. This was due to the fact that the digital devices and services were simply not adapted to these people's needs and were too complex to use and maintain. My frustration and interpretation of the phenomenon pointed towards a practical problem in how digital devices and digital services are shaped. This in turn gave me a first glimpse of a research question and a problem to research. Problems and questions like these have also been highlighted by Olsson et al. (2017); Olsson and Viscovi (2016); Viscovi et al. (2017a) who claim that there is a discrepancy between what is offered and provided to those they call seniors, including the young elderly, and the needs and demands of some of them. Finding one or more answers and thus proposing solutions to the practical problem, can enable young elderly people to benefit from what the digital world offers and thereby improve their ability to benefit from DWSs.

The relation between practical problems and research problems can be seen as a circle (Booth, Colomb, & Williams, 2008); they claim that the starting point is often a perceived practical problem. Figure 8 shows the starting point with the practical problem on the top of the circle. In this case, the starting point was the perceived problem that not everyone could handle digital technology. The problem motivates the research question that in turn defines the research problem. The research problem leads to the research answer that helps to solve the practical problem. Although the initial practical problem is solved, the solution can create a new problem in connection with the first practical problem, which in turn can create one or more practical problems that need a solution. The practical problem deals with understanding how young elderly could become interested in,

adapt to, and continue to use DWSs and this in turn creates a need for formulating a conceptual framework for a digital servicescape.

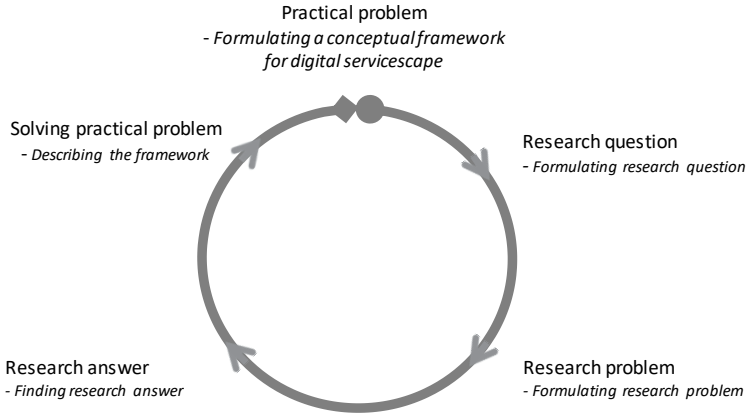


Figure 8. Approaching the practical problem

Figure 8 illustrates how a practical problem, in this case my experiences as practitioner in marketing in relation to digital devices and the services they offer, developed into questions to answer and problems to be solved. In order to find answers to the research questions and solutions to the problems, research must be conducted on young elderly, motivation, behaviour, wellness, and servicescape in general and digital servicescape in particular. Hence the focus on methods to conduct research in this chapter.

Sullivan (2001) argues that research is usually conducted in three different ways: i) exploratory, ii) explanatory, and iii) descriptive. Phillips and Pugh (2000, p. 50) describe exploratory research as "research that is involved in tackling a new problem/issue/topic about which little is known, so the research idea cannot at the beginning be formulated very well." Explanatory research (Sullivan, 2001) is conducted for solving a problem, and therefore is used for validating or rejecting theories and testing hypotheses. Thus, it is sometimes used as secondary research in order to review data or literature. Descriptive research is scientific work within a field where some knowledge is already at hand and where the researcher focuses on describing phenomena of interest (Patel & Davidson, 2003).

As the research in this thesis focuses on DWSs for young elderly, different research methods such as focus groups, had to be used in order to gather both broad and deep knowledge. Broad knowledge is of importance as it can provide different perspectives and thereby help to accomplish deeper knowledge. In this thesis, broad knowledge was of interest in order to provide data from various sources to enable a broad and pluralistic perspective of the problem in order to find answers to it.

This in turn creates the conditions for generating deeper knowledge that facilitates the creation of adequate solutions to the problem. Fejes and Thornberg (2015) argue that within the scientific community a more pluralistic view of science has begun to emerge and Bauman (2008) states that researchers do not have the option to be neutral, instead engagement is a necessity.

Regarding this thesis, where focus groups were selected as one of the methods to collect data, the engagement and involvement of the researcher are important in order to lead the focus group. However, it thereby confirms the need for the researcher to show restraint and avoid influencing the respondents as far as possible. Bauman (2008); Fejes and Thornberg (2015) state that the relation between the researcher and the research object is complicated and that nowadays it is no longer necessary that the researcher takes an independent position to what is to be researched. This indicates a more open mind among the scientific community since input from broader experience and perspectives can lead to deeper understanding and knowledge. This means that the researcher can more easily use experiences and knowledge of their own in the research, still with the same discernment that is always required in scientific research, based on good methodological approach. Hence, the next section will highlight the methodological approach to solve the practical problem of formulating a framework for a digital servicescape.

2.1.2. The methodological approach

The basis for scientific research lies in how it is performed and therefore the methodological approach is of great importance. In addition, an important element in research is to choose between different options. So also in this thesis where different possible methods and options were considered and which are therefore discussed in this section. Allingham (2002, p. 10) describes that to choose is to have at least two options to choose from. He pinpoints four areas of contexts: "that of certainty, where all items are definite; that of uncertainty, where items involve chance, either with or without given probabilities; that of strategy, where two persons' individual choices are interdependent; and that of group choice, where a number of people must choose collectively". A researcher has to choose between different options (e.g. methods) and cooperation with other researchers. Depending on what the researcher wants to accomplish different methods are available. Often a combination of methods is needed in order to undertake scientific research since various methods can help to reach deeper understanding and knowledge by providing diverse perspectives of the research object. Regarding this thesis, a combination of methods proved helpful to gain insights as the work of others, surveys, and focus groups contributed with diverse perspectives. As different methods

are more or less suitable for a specific research it is of great importance to determine which method or methods are best suited for the purpose.

In general, it is common that researchers address their research depending on which context, research objective, research question, and discipline they work within. In order to realise the desire for deeper insights, scientists like Gummesson (2000, 2005, 2006) and Yin (2015) recommend researchers to use the qualitative method when studying phenomena. Additionally, Yin (2015) suggests triangulation as an analytic method in order find evidence from two or more sources. Collecting data from different sources would thereby help in the work to gain deeper insights. Hence, this work has been influenced by the work of these scientists. Triangulation has been particularly useful in providing insights in this thesis since the data has been obtained from different sources. A recurrence of the same method, in contrast to what triangulation proposes, could confer benefits to the work as it would have been of interest if the result would differ or not. If the results differ, it may be an indication that something is not correct. This does not necessarily indicate that a similar or exactly the same result means that everything is accurate. Whatever the outcome, it provides an indication of the work performed. In this thesis triangulation has been applied by using focus groups, surveys, and literature review. This was done in order to collect data with the intention of finding patterns and thereby finding answers to the research questions. Working with the studies, the papers and this thesis raised some questions regarding methodological approach and they were:

- What methodological approach is best suited for the work?
- What kind of data will be appropriate to collect within the chosen approach?
- How will the data be analysed in the context of the selected method and will it influence the data collection?

In order to describe how the six studies are related to the five original research papers, whose order is shown above in Figure 7, Table 4 is presented.

Table 4. Data collection techniques used in studies and papers

Study	Paper	Data collection techniques
1	1	Survey
2	2	Focus group
3	3	Literature review
4	4	Survey
5	4	Focus group
6	5	Literature review and conclusion of study 1 – 5

In the work on this thesis, some inspiration comes from hermeneutics and especially the view of the hermeneutic circle. In the heart of hermeneutics lies the interpretation of text, context and conversation (Kjørup & Torhell, 2008; Patel & Davidson, 2003; Prasad, 2005). In addition, the interpretation can be seen as on ongoing circular process, a hermeneutic circle, to gain insight. The hermeneutic circle constitutes an integral between text and context and works like a spiral to fulfil the interpretation of the text (Gummesson, 2000). Dilthey and Jameson (1972) propose that hermeneutics should be interpreted as the humanities' counterpart to statistics and Heidegger (2010) argues that hermeneutics with the idea of an integral has transformed from being seen as a method to being regarded as a philosophy dealing with existential issues. This way of thinking can be related to this thesis as its focus lies in DWSs for young elderly and thereby deals with existential issues like motivation and wellness. With the focus on developing knowledge about DWSs for young elderly, an interpretation of the phenomena studied is essential. This also includes interpreting and understanding what other researchers have seen and proposed including how they interpreted the phenomena they studied. The hermeneutic circle with its movement between interpretation and understanding helped to bring deeper knowledge into this research.

Within the circle with its ongoing process and progress with cumulative understanding, thoughts and ideas, the research insights grew gradually. Therefore, this philosophy has a reputation for being useful in qualitative research, and in the research where focus groups, surveys, and literature review were used, hermeneutics circle with its preunderstanding, interpretation and understanding played an important inspirational role. The first view of the phenomena where the lack of usability of digital devices played an important role created a perspective of the digital world. In order to understand the phenomena, different perspectives developed and were approached by collecting data to analyse. This can be seen as an ongoing process, as visualised in Figure 9, where for example one analysis can provide a new or partly new phenomenon of interest. In this case, the first image of the phenomenon of the problems monitoring digital devices and services developed into an interest in the phenomena of developing and providing DWSs within a digital servicescape for young elderly. Hence, the image of an ongoing process helped within the work of understanding and developing knowledge.

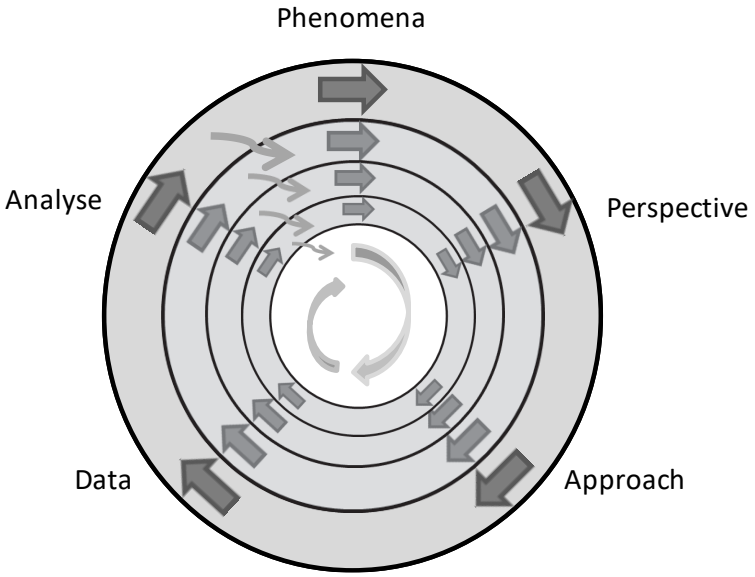


Figure 9. Methodological approach

Regarding this thesis, three different methods have been used and on one occasion, in developing the fourth paper, two methods were used. The use of various methods was important in order to provide different perspectives on the research object, which in turn helped to gain deeper insights. The conclusion is that different perspectives and approaches are important because they help us to gain insights for the development of knowledge.

The questions dealing with the methodological approach provided valuable input in order to find out more about the group of young elderly. However, not only about the young elderly, but also about what differentiates them from other generations, what relation they have to digital devices, and how they adapt to services in general and digital services in particular. In addition, the questions provided input on various aspects of wellness in general and digital wellness in particular.

2.1.3. IS and IT research methods

IS and IT are strongly related to each other and Hirschheim and Klein (2011) note that at first the focus was on research methods in IT which started about 1964 and later, in the 1980s, more interest was placed on IS. Porra, Hirschheim, and Parks (2014) discuss historical research methods in the field of IS research and claim that the legacy of previous IS research is of importance and argue that each different approach, paradigm, technique, and method can contribute to understanding. Alvesson and Sköldberg (2008) claim that one view among the scientific community is that within technology-driven research the problem has to be determined

first, then the method. Their view on technology is in turn supported by the findings of e.g. Olsson et al. (2017); Olsson and Viscovi (2016); Viscovi et al. (2017a). This pointed towards a need for finding methods to reach a deeper understanding of the problem. It meant that data has to be collected and it led to the question of which approach or approaches respond best to this need. By starting with conducting two studies and writing two papers in parallel (P1 and P2), where young elderly and digital services and young elderly and digital use were in focus, it was possible to tackle the problem from different perspectives.

Behavioural science and design science are two paradigms which can depict much of IS research (Hevner et al., 2004). They explain that behavioural science focuses on developing and verifying theories in order to illuminate and forecast human or organisational behaviour. Design science, on the other hand, strives to break down borders in order to be innovative and thereby create new artefacts. This can be connected to what Schein (1985) proposes with the levels of culture and their interaction where he claims that artefacts and creation are linked to technology.

Rossi, Henfridsson, Lyytinen, and Siau (2013) argue that IS research has its origin in researchers such as Langefors, Teichroew and Mumford. In addition, they claim that design science research is a cornerstone to IS research and state that design science is natural in IS since design is essential for developing new artefacts. Cole, Purao, Rossi, and Sein (2005, p. 325) claim that "Information systems research has been criticized for having little influence on practice" and argue for using research methods to provide a better balance between both researcher and practitioners. They suggest that researchers be proactive by using for instance the approaches of action research and design research. Linked to the action research and design research discourse Sein, Henfridsson, Purao, Rossi, and Lindgren (2011) propose action design research. They argue that action design research (ADR) mirrors the assumption that IT artefacts are assemblages formed in an organisational environment through usage and development. The basic idea of action design research is that artefacts emerge through the context and that the design is an ongoing process. Sein et al. (2011, p. 53) summarise by stating that "ADR reaches into the very core of IS: designing IT artefacts while allowing for their emergence an organisational context, and seeking utility in the ensemble they represent". This approach, with the ongoing development of IS, shows the necessity for deeper knowledge of the various stakeholders such as IS developers, digital servicescape providers and target groups such as the young elderly who are the focus of this thesis.

2.2. A critical evaluation of possible methods

With the goal of increasing the opportunity for young elderly to benefit from DWSs and develop sufficient digital servicescapes, it is essential to use research methods in order to collect data. When a researcher is facing a problem and seeking answers, there is a range of methods to use. Regarding facing a problem it could be of interest to keep in mind what Popper (1972) argues when one single theory appears to solve a problem it could be a sign that neither the problem nor the theory were entirely understood. Therefore, and in order to study the problem from different perspectives, the use of different methods could be helpful to understand more of the problem and how to solve it. The selection of methods is connected to the context, where the focus is on the young elderly's use of DWSs and what to consider when developing and providing digital servicescapes, in which the research is carried out. The different methods have their merits, however also their limitations, which makes the selection of great importance. Hence, in this section, possible methods are discussed and evaluated.

This part will highlight some of the methods available that are suitable for research on young elderly's use of DWSs and what to consider when developing and providing digital servicescapes. First, the methods will be discussed and then, after the evaluation, those selected will be described in more detail. This section will present three possible methods for assessing young elderly's use of IS for DWSs and digital servicescapes. In the context of young elderly in the use of IS for DWSs and digital servicescapes there are three possible methods presented in this section. Based on the context these selected methods are briefly presented.

Action Research, which is related to design research and action design research, is defined as a method where intention is to contribute to academic theory, as well as practical action (Argyris, Putnam, & Smith, 1985; Cole et al., 2005; Sein et al., 2011). This is done by experiments on actual problems where the solution of the problem is in focus. To achieve this, an iterative process that includes problem identification, planning, action, and evaluation has to be performed. This means that action research is a form of qualitative research method where the researcher together with the participants play an active role and cooperates in the study (Yin, 2013). Gummesson (2004) argues that it is the most demanding method but also the most rewarding. In addition, he claims that there is a risk that the researcher gets too involved and risks blurring the picture. Therefore, he suggests that, to the maximum extent possible, everything is documented promptly and if possible taped, photographed and filmed.

Case study is defined as research design where usually there is a single case in focus, but in some cases a few may come into consideration (Bryman & Bell, 2011; Yin, 2013). The reason for using more than one is to

enable comparison. Case study is a method for deep and detailed analysis of a real-life phenomenon within its environmental context (Ridder, 2017). According to Eisenhardt and Graebner (2007, p. 30) case study is a popular method as it constitutes a relevant research strategy and "The result is fresh theory that bridges well from rich qualitative evidence to mainstream deductive research". Bryman and Bell (2011) state that a case can be a single organisation, a single location, a person, or a single event. Yin (1994) argues that it is important to distinguish between the main case and the additional and optional embedded cases. Yin (2013) claims that a case study can be based on qualitative or quantitative data, or a combination of both. In addition, he argues that it usually contains data from the field. According to Ridder (2017) case study can be categorized in four different research designs. The first has its starting point with a focus on what Davis and Eisenhardt (2011) describe as the case and not the theories. The second concerns Yin (2015) who claims that it aims to answer how and why questions and thereby filling gaps and holes in theories. The third research design approach is linked to e.g. Schwandt (1994) and Stake (1995), and deals with philosophical spheres and is based on the social construction of meaning and reality. The fourth and final case study design focuses, according to Ridder (2017) on anomalies that previous research was not able to explain, meaning that it can highlight gaps in theories.

The selected methods are evaluated with the aim of selecting the best suited for research on young elderly in the context of DWSs.

Action research is considered as a good methodological path for working close to the field as it involves the researcher integrating with the participants. This can work very well, but may risk the researcher becoming too involved and thereby interfering too much with the participants and thus affecting the outcome of the research. Within the framework of the method, it involves carrying out experiments in cooperation with the participants, which in turn assumes that there is access to resources required to accomplish the purpose of the research. In addition, it can be hard to find resources needed to fulfil the research purpose. The need for resources to carry out experiments, but also to some extent the risk of interfering too much with the participants are the reasons why action research was not selected as a method in the thesis work.

Case study is regarded as a fruitful method when one or a few cases, or embedded cases to study are available. However, it has the limitation that it has to rely on one or a few cases. In addition, in order to draw conclusions, it is best if it is possible to compare with the results from other research. Otherwise, it stands alone and therefore can face criticism since it can be hard to draw conclusions. The ability to focus on a particular case is why case study was taken into account in the work on this thesis, however the possible limitation of drawing conclusions meant that other methods were considered.

Within the research, efforts have been made to interpret and structure the participants' views and expressions in order to find patterns. The purpose of this was to understand and explain the phenomena and thereby enhance and make it possible for the young elderly as well as other stakeholders to benefit from DWSs.

2.3. Data collection

With the aim of increasing the opportunity for young elderly to benefit from DWSs and develop sufficient digital servicescapes it is necessary to collect data. The purpose of this was understand more about the young elderly and their context (P1 – P5), their digital use and usage of digital services (P1 and P2), on service, servicescape, and digital servicescape (P3 and P5), and on wellness and digital wellness (P4 and P5). There are different technique for data collection available and in this section some of them are highlighted. In addition, the techniques taken into account will be discussed in brief and then an evaluation is performed. In section 2.5, 2.6 and 2.7 the selected techniques are presented.

Observation is a technique for gathering information which can be considered as a kind of primary data (Yin, 2013). While performing observations, different degrees of interaction with what is studied are possible. Observations can be performed by the researcher by passively studying the research object, but the researcher can also participate actively and interact with the research object. Sverke (2004b) claims that observation is a useful technique in both qualitative and quantitative research, however often time-consuming. In addition, Patel and Davidson (2003) argue that it can be a costly and vulnerable way of working when unforeseen things occur. There are limitations to what can be observed, but rather the researcher's imagination and creativity set limits than the actual research object.

Interview is a technique based on interaction between the researcher and one or more respondents and it can be performed in several different ways (Bryman & Bell, 2011). Yin (2013) describes two main categories, the first being structured interviews and the second is qualitative interviews. A structured interview, sometimes called a standardized interview, aims to ask the same questions to all respondents within the same context. The idea is to find patterns by analysing the respondents' answers and thereby propose explanations and to draw conclusions. A qualitative interview differs from a structured interview in that it has a more open approach where the interaction is less strict and rigid. In addition, a qualitative interview can be conducted in the form of conversation rather than following a predetermined pattern.

Focus group is a technique where one or more groups of participants constitutes a data collection unit (Yin, 2013). Bryman and Bell (2011)

claim that focus group is a good technique to deeply penetrate and explore a topic or a theme by interviewing a group of participants. Working with focus groups requires the researcher to interact with the group. This means that the researcher can influence the outcome of the focus group interview. This shows the importance of conducting the research correctly but can also be a disadvantage if handled wrongly (McDaniel & Gates, 2010). In addition, the authors claim that the general idea of focus group interviews is that the group dynamics generate thoughts and comments that can provide deep insights to the research.

Survey is a technique where data is usually collected by questionnaires or, less commonly, in structured interviews (Bryman & Bell, 2011). According to McDaniel and Gates (2010) survey research is the most popular method for collecting primary data. The data collected is the basis for finding patterns. This in turn provides the basis for explaining connections and developing knowledge. Working with surveys demands careful consideration of the methodological approach in order to avoid errors (Fowler, 2002; McDaniel & Gates, 2010; Yin, 2013). Sverke (2004a) describes explorative, descriptive and explanatory as the main purposes when conducting a survey. According to the author, the option that is selected depends on how deep and well-developed the knowledge is in the field.

Literature review is a technique used to benefit from knowledge others have contributed (Yin, 2013). The purpose is to find what knowledge has been put forward within the field and how it has developed over time. It may also be necessary to show opposite or controversial views (Patel & Davidson, 2003). The knowledge collected from literature provides insights from theories, models and previous surveys within the field and thereby helps to define the research area. In addition, previous research can provide ideas and inspiration for research design and conduct and thereby be beneficial to the outcome of the research.

Based on the selection of the approach, as described earlier, I have evaluated the advantages and disadvantages of the data collection techniques according to context of the young elderly using DWSs.

Observation is an interesting technique that, however, has its limitations because it can be time-consuming and expensive to implement. Another limitation is that it would be difficult to visually observe what factors affect how young elderly use a smartphone, tablet or computer. Hence, observation was rejected as a suitable data collection technique for this research.

Interview has its advantage in the interaction between the researcher and one or more participants. It offers the chance to find out what people think and also to find and discuss phenomena of interest. In addition, it can also provide opportunities to interpret how the respondents express themselves. Thus, it has an approach that is in accordance with the hermeneutic circle. In this research, the use of interviews with one or a few

people was rejected because focus groups were considered a better option for investigating the issues concerning the young elderly.

Focus group constitutes a technique of collecting data by working with interviewing groups of people. Barbour and Kitzinger (1999, p. 4) capture the idea well by expressing that "Focus groups are group discussions exploring a specific set of issues". During the work on this thesis focus group was selected as an interesting technique to use as it provides insights through discussions within the groups. However, it also provided opportunities to go further and deeper into the issues and the questions, as it was possible to interpret not only what the participants expressed, but also how they expressed their thoughts and arguments on the phenomenon of interest. Overall, focus groups constitute a good technique for this research and therefore were selected as a technique to use in P2 and P4.

Survey is an interesting technique for collecting information on a phenomenon of interest. Here questionnaires are a commonly used technique for collecting data. However, the option of structured questions was also considered. Questionnaires can be formulated in different ways, as the respondent may be given the opportunity to choose from different answer options or offered to express thoughts with a text. In order to cover as much as possible, it is possible to combine these options. Survey has the limitation that it can be hard to persuade people to fully complete the questionnaire. However, taking this and other objections into account, survey was selected as the technique to use in P1 and P4 in combination with the other possible techniques used in the work with the thesis.

Literature review constitutes a technique to benefit from what other researchers have contributed in order to gain knowledge on the phenomenon of interest. By studying what others have contributed, an important and necessary opportunity is offered to find out what has been discussed over time and what is being discussed within the research field of today. Hence, literature review was chosen as an important and obvious technique to accomplish the purpose and research goal of the thesis and therefore used in P3.

Having discussed possible techniques and then evaluated them, the chosen techniques, focus group, survey and literature review, are discussed in more detail.

2.4. Focus group

In this research, focus groups, used in P2 and P4, proved very useful when it came to collecting data in order to provide insights from young elderly. Research work with focus groups has shown some benefits but are, like other data collection techniques, not made for all kinds of research work. Instead, it should be considered a technique that is useful and can stand

alone as well as in combination with other data collection techniques. In this thesis, working with focus groups has given some valuable qualitative data that a quantitative method could not have provided. Hence, focus groups in this kind of work are useful for gaining knowledge and insight.

2.4.1. Focus group as data collection technique

Focus group is a data collection technique in which a group of participants is led by a moderator whose aim is to create interaction between the group members through in-depth discussion in order to investigate a specific issue (McDaniel & Gates, 2010). In this thesis the focus group method has been used to collect data to provide insights into the young elderly.

Working with focus groups can be a useful way to gather information. Barbour and Kitzinger (1999, p. 5) argue that "Focus groups are ideal for exploring people´s experiences, opinions, wishes and concerns." Yet focus groups are so much more than just "question-and-answer interviews" (McDaniel & Gates, 2010, p. 94). However, focus groups are not the technique suitable for every kind of research and Schein (1980, p. 171) claims that "Groups are not a universal solution for all types of problems." Barbour and Kitzinger (1999) state that focus groups are useful for exploring an explicit set of topics. They continue by emphasising that focus groups can be used in combination with other data collection techniques, and in both qualitative and quantitative methods. Throughout research on IT and IS, quantitative methods can be a very useful way to gain insights and develop knowledge (Checkland & Holwell, 1998; Shotter, 2006).

With regard to the collection of information,Schein (1980, p. 171) argues that "They should not be used if the problem does not specifically require a sharing of information and evaluation of alternatives, or if culture amplification is to be avoided, or if the group climate runs the risk of creating group think by squashing dissent." Finally, it is important to keep in mind that working with focus groups requires that the researchers and the participants are prepared to put in effort with their time and the energy that would be needed (Schein, 1980). As shown, focus groups have their advantages but also their drawbacks and thus, for instance, surveys and literature review can be helpful to gain insights and develop knowledge and this answers the questions in section 2.1 on what data collection techniques to use. The answer is that the use of several data collection techniques helps to provide relevant data and that this helps to create knowledge, as other researchers have stated. In addition, focus groups can be a useful technique for co-creation and thereby make it easier to develop sufficient DWSs and digital servicescapes.

As discussed in this section, focus groups can be regarded as a useful technique to collect data and in addition, it can be used for co-creation. However, data collection can be carried out using other techniques such as surveys and literature reviews. Therefore, the survey technique will be

presented and discussed next and later literature review, where the benefit from the work of others will be highlighted.

2.5. Survey

Within the thesis work, survey has proved to be a useful help to gain broad and deep insight and therefore was applied in P1 and P4 where the focus was on what equipment the respondents had, their use of Internet, and how they made use of and shared knowledge with others. The opportunity to develop questions during the process enable the collection of valuable data. This meant that the questionnaires could be developed during the research process and the questions could be refined. This turned out to be a valuable way of gaining further research insights, not least since it provided different respondent groups on different occasions to answer the questionnaires in order to collect data.

2.5.1. The technique of survey

Survey technique is used in various research disciplines and has gained a lot of credibility among researchers. Bradley (2007, p. 44) claims "In fact, the word 'survey' is best seen as a synonym for the word 'study'." There are several ways to work with surveys and according to Patel and Davidson (2003) and Bradley (2007) the most common are case studies and experiments. They add that conducting a survey involves studying a specific group through questionnaires or interviews; common questions to answer are what, when, where and how. Fowler (2002) argues that there are no error-free techniques used will affect the result. He proposes three components for sample surveys: i) sampling, ii) question design, and iii) interviewing (Fowler, 2002, p. 4). Each of these three is useful for surveys, but in order to succeed, a combination of them would be vital. Sampling is a way of gathering information. Essential for successful sampling is to give as many of the target group as possible the chance to be part of the sample. Using questions is a main part in the survey process. Hence, careful attention should be made to designing questions that correspond to the research aims.

In this thesis, surveys have proved to be a good technique for finding and collecting data about the younger elderly's views in terms of motivation, behaviour, wellness, digital devices, and digital services. However, it is important to emphasise that in order to enable both a wide and deep perspective, it is also necessary to use other techniques. So far, different techniques have been presented and discussed. Nevertheless, an important part of research is to benefit from what other researchers have accomplished. Hence, literature review will be discussed next in order to gain insight from the work of others.

2.6. Literature review

Literature review is to some extent at the heart of research as its foundation lies in what others have contributed. Therefore, throughout the five papers of this work, various contributions have been taken into account. However, it can be mentioned that in P3 the study was conducted as a literature review. Hence, the paper focuses on the contribution of other researchers.

2.6.1. Benefit from other's work

Contributions by people in general and scientists in particular are not just an option but a necessity in scientific work. The best way to build on the work of other researchers is to carry out a literature review. It is common that researchers write their literature review at the beginning of their work (Bell & Opie, 2002). However, researchers are recommended to keep at least one eye on the research frontline as new research will probably be published during the work.

Bryman and Bell (2011) explain that a literature review can help researchers find out what is already done in the specific field of interest, thereby reducing the risk of "reinventing the wheel". However, It must be stressed that an important part of research consists of questioning, confirming, challenging or disproving what others put forward. This is to some extent a part of the answer to the first question regarding the methodological approach presented in section 2.1, namely what can be learned from previous research? The answer is that previous research is a basis for exploring, understanding, and explaining phenomena. However, Wee and Banister (2016) stated that there are values to be added in research by doing a literature review. Values like empirical insights, methodologies, theories, gaps in literature and a research agenda, relevance for real-world applications and conceptual models. They claim that a literature review can be useful for finding the state of knowledge, helping to develop methodologies as well as theories. Literature review can also help to close gaps in research, be useful in real-world practice and in underpinning conceptual models. In this thesis, the work of others has provided many important insights, and without this input the thesis would have been almost impossible to accomplish.

2.7. Data collection techniques used in the six studies

In this section, the six studies are presented in a chronological order starting with the papers *Young-elderly and digital use* and *Young-elderly and digital services*, followed by *E-servicescape is plausible*, *Altruistic young elderly in Sweden – a pilot study*, and finally *DWSs' servicescape for young elderly*. In addition, it should be noted that when the studies were

conducted in 2013, 2014 and 2015, there was not much published on young elderly, DWSs, and digital servicescape (e.g. P1 based on 5 articles, P2 on 5 articles and P3 on 7 articles).

2.7.1. Study 1 – P1

The first study focuses on young elderly's use of Internet, digital devices and IS. It also highlights their willingness to making use of and share knowledge with others. Furthermore, their thoughts on using IS were investigated.

Data collection through one survey and one focus group was conducted in 2013.

Selection of respondents was conducted by contacting one representative of a group of golf players in Jönköping who during the winter played bowling. The representative asked the members if they accepted would be willing to participate in the research. 32 respondents participated (23 male and 9 female) in the survey and in the focus group there were eight informants. 29 of the respondents had retired from work and all 32 were 65 or older. There was no drop-outs. The informants of the focus group were selected by asking the respondents of the survey if they wanted to participate in the focus group and eight accepted. According to Lantz (2013) descriptive statistics aim to clearly and structurally depict the essential features of a collection of data (e.g. through numerical, mean, and median). The idea was to use small groups since official statistics are available (e.g. from SCB, DIBS, PostNord, and IIS). The respondents of the surveys constituted a base for forming the focus groups used in study 2.

The data from the survey was descriptively presented. The sample (32) was too small for further statistical analysis.

2.7.2. Study 2 – P2

The second study, like the first, focuses on young elderly's use of Internet, digital devices and IS. It also highlights their willingness to make use of and share knowledge with others. Furthermore, their thoughts on using IS were investigated.

Data collection through two surveys and two focus groups was conducted in 2013.

Selection of respondents was conducted by contacting two groups of boule players in Halmstad. Group 1 consisted of 15 respondents (9 male and 6 female), group 2 consisted of 16 (8 male and 8 female) in the survey and in the focus groups there were six and eight informants. 27 of the respondents had retired from work and 23 of them were 65 or older. There were no drop-outs. The informants of the focus group were selected by asking the respondents of the survey if they wanted to participate in the focus group and 14, six in the first group and eight in the second, accepted.

In addition, it can be mentioned that there was an equal gender distribution of informants in the three focus groups (P2).

The data from the three surveys (P1) was descriptively presented. The samples (31) were too small for further statistical analysis.

2.7.3. Study 3 – P3

The third study was conducted during 2014 as a literature review on servicescape with potential in a digital context.

The foundation of the study was servicescape; the physical place where customer and provider meet. Articles were searched for with key words such as servicescape, e-servicescape, digital service, and digital landscape. More than 400 articles were studied and from them the concepts and descriptions were collected.

The data from the study was analysed on the basis of the phenomenon of an e-servicescape in comparison with a servicescape. The phenomenon was characterised in terms of *fully possible, plausible and not possible compared to ambient condition, design factors, staff behaviour, and staff image*.

2.7.4. Study 4 – P4

The fourth study (P4) focuses on young elderly's use of Internet, digital devices and IS, and consists of the same survey as in studies 1 and 2. It also highlights their willingness to make use of and share knowledge with others.

Data collection through one survey was conducted 2014.

Selection of respondents was conducted by contacting the chairman of an association in Kalmar. With his permission the survey was handed out before the start of a meeting. 108 respondents in the survey submitted the questionnaire by post (61 male and 47 female). 34 were under 60 years, 20 were 60 – 64 years old, 24 were 65 – 69 years old, 20 were 70 – 74 years old, and 10 were over 74 years old. The participants were asked to share the questionnaire with others and if necessary also copy it, hence it is not possible to calculate the number of possible respondents or fall-offs.

The data from the survey was descriptive presented in line with study 1 and 2 (P4). The samples (64 young elderly) were too small for further statistical analysis.

2.7.5. Study 5 – P4

The fifth study (P4) focuses on young elderly's perception of the needs and demands of an IS.

Data collection through one focus group was conducted in 2015 during three meetings, each two hours long.

Selection of informants was conducted by contacting one young elderly in Kalmar. He was asked to form a focus group and gathered five informants, including himself (4 male and 1 female). Data was collected in three steps. Step 1, young elderly's needs (their own or others), step 2, selection of one need, and step 3, detailed discussion of chosen need.

The data from the focus group was categorized in six concepts (offers, support, security, reward, intermediary and IS). These together with chosen theories gave rise to three key elements (context, trust, and reward). Those elements are connected to expectancy and motivation.

2.7.6. Study 6 – P5

The sixth study (P5) summarises the five previous studies (1 – 5) to create a model of younger elderly's DWSs.

The results of the five studies were gathered and analysed according to the developers and providers, servicescape, young elderly, and young elderly's wellness. The analysis led to a program containing five topics for the younger elderly and five topics for suppliers.

2.7.7. Summary of 2.7

In total, six studies have been conducted. The results are presented in the five original research papers. How the studies and the papers relate to each other and what methods used are presented in Table 4. The three methods used, focus group, survey, and literature review, have each in their way contributed valuable knowledge and thereby helped to find answers to the research questions. In addition, it has to be noted that focus groups constitute an opportunity for co-creation that can be of interest to consider when developing DWSs and digital servicescape. By using three methods, the opportunity has been given to see the problem from different perspectives, creating opportunities for finding more insights, and drawing deeper conclusions.

2.8. Ethics and morality in research

The ethical and moral discussion in this section is based on the context of young elderly's use of DWSs and the research questions.

Ethical and moral problems and questions are closely related to research. Scientists have to be honest, try to avoid being deceived, and should do their best to carry out their work in a good scientific way (Ejvegård, 2009). Patel and Davidson (2003) distinguish between scientific research and carrying out an investigation. They assert that the main difference lies in that the scientific researchers must comply with the ethical and moral framework that exists within the scientific community. According to Ejvegård (2009) ethics consists of principles about what one

can and cannot do. Morality, on the other hand, is the characteristics of people such as a good manner, character, and good behaviour. Gadamer (2004) discuss philosophical ethics and put forward the need for moral awareness and the importance of clarity by describing the phenomena. Fejes and Thornberg (2015) state that the researcher has to comply with research ethics that include not fabricating or distorting the data. They add that respect has to be paid when it comes to informing the parties concerned and obtaining their consent, ensuring confidentiality as well as ensuring that the results are not used improperly.

Bryman and Bell (2011) indicate that it can be difficult to draw a line between ethical and unethical research. They point out that ethical codes can help and give guidance. The authors add that computers, and especially the Internet, provide more as well as new ethical challenges. Particularly what they mention as a blur between public and private space and people's anonymity can cause problems that are a challenge to overcome.

The research for this thesis has been checked so that it follows the Science Council's ethical guidelines (Vetenskapsrådet, 2016) and the Central Ethical Review Board's regulations (Ethical Review Boards, 2015). All participants have approved and given their permission for their contribution to be used for science purposes. Additionally, the data is anonymized in order to protect and guarantee the participants' privacy. Even if everything complies with the requirements for scientific research, it does not mean that it cannot face criticism and, therefore, criticism on the approach as well as other influences is discussed, in the next section.

2.9. Discussion and criticism on the methodological approach

The methods in this thesis were selected to provide insights into building and developing DWSs for young elderly. In turn, also other stakeholders' (e.g. developers and providers) interests were also of concern as their part is important for providing a more holistic perspective. Working with research is challenging and demanding because the work must meet the requirements for conducting research. However, it is good to know that the work of other researchers had to face and meet the same challenge, demands and requirements. Therefore, it vital that scientific work is in coherence with ethical requirements and meets the required approval. If not, it will not be accepted within the scientific community.

The methodological approach is an important and crucial part in scientific work and has therefore been considered throughout the work. Research from various sources was necessary as it provided insight, knowledge and ideas to the thesis. This is because research develops from what previous researchers contributed as well as what has been developed throughout the work, in accordance with the view of the hermeneutic

circle. In addition, the use of focus groups (P1 and P4), surveys (P2 and P5) and literature review (P3) provided more opportunities to study the phenomena from different perspectives and thereby to add and interpret data in line with the idea of an ongoing process, a hermeneutic circle, to gain more insight.

One could argue, since this thesis uses multiple methods, that it would have been better to focus on only one of the methods. In line with that, it can be argued that focusing on one method might have provided deeper knowledge. However, it is not possible to claim that this would necessarily have held true. As an alternative it can be argued that using multiple methods, with the intent to direct the spotlight towards the phenomena from a number of different angles, widened the scope of the investigation. However, it can be noted that there are differences between using multiple methods compared to what at a first glance may look like a similar approach, namely mixed-methods design. Morse and Cheek (2014, p. 3) claim that "Mixed-method design consists of one complete project" and should not be mixed with multiple-methods research which includes two or more projects with separate research questions for each of them. However Morse and Cheek (2015) argue that both variants can help to generate interesting research. Patton (2015) claims that mixed methods can increase the credibility and strengthen both qualitative and quantitative research. Mertens (2013, p. 215) states "Mixed methods researchers are extending our understandings of how to understand complex social phenomenon, as well as how to use research to develop effective interventions to address complex social problems". What she argues is in line with this thesis' use of several methodological approaches aimed at finding a broader, as well as a deeper, insight to the phenomena. This proved to be a positive decision as the combination of surveys, focus groups and literature review together provided important data to the work.

In line with the purpose and research goal, *How to design a DWSs' servicescape for young elderly so that its usability meets the young elderly´s needs and demands?*, it is of importance to have both broader and deeper perspectives of the phenomena and therefore different types of data were gathered. Data was collected through questionnaires, literature review, and focus groups and was sorted, analysed and interpreted. As the work progressed the need emerged to gain insights from additional perspectives with the consequence that data was added subsequently. This additional data contributed to a deeper knowledge of the phenomenon and the context it occurs in.

2.9.1. Influences on the research

The hermeneutic circle has had considerable influence on behavioural science and is underpinned by qualitative methodology within the context

of the thesis. The method, with its focus on individuals in their own context, helped to gain insights into young elderly's everyday life. The criticisms that can be made against the method are that it leads to the researcher's interpretation becoming fundamental to the outcome. However, criticism is also directed against the quantitative method in which the researcher interprets such as numbers and statistics. Therefore, Yin (2015) argues for triangulation as it constitutes a good opportunity to gain deeper knowledge of the same phenomenon by providing input from multiple perspectives. An approach inspired by the hermeneutics circle was selected for the research because the participant's insights and experience are essential for the outcome and development insights. Another valuable approach was within the field of IS research, its concepts of design science and action design research which provided useful contributions during the work. The ideas of Hevner et al. (2004); Hirschheim and Klein (2011); Porra et al. (2014); Rossi et al. (2013), and Sein et al. (2011) with the focus on the ongoing process in developing IS was helpful as it points towards the importance of, for example, development, cooperation, involvement, and collaboration.

This thesis mainly employs qualitative research although there are some elements of quantitative methods. Especially in P2 and P4 there are influences of quantitative methodology. Nevertheless, a question raised by Åsberg, Hummerdal, and Dekker (2011) if quantitative and qualitative methods should really be considered as methods has some relevance. However, Alvesson and Deetz (2000) argument that there is a risk of focusing more on the method rather than on the research itself should instead be of concern. Nonetheless, in conclusion, a strong methodological focus can strengthen and validate what is most important, namely the outcome of the research.

Bell and Opie (2002) claim that researchers nearly always do their literature review in the beginning of the research work. Regardless of what kind of research scientists are interested in it would seem advisable to keep in touch with the research frontline throughout the whole research process. Otherwise, there is a risk that important knowledge does not get included in the research. It must be mentioned that during the work on this thesis, a literature review was performed in P3. However, all through this work, interest has been devoted to the research front and therefore it is vital to be aware of current research as it appears.

2.10. Summary

With the aim to help young elderly benefit from DWSs to increase their chances of healthier aging, reduced ill health, and higher quality of life, different methods and data collection techniques had to be considered. In addition, the developers and providers, together with the interests of other

stakeholders, were of concern as they play important roles in order to provide and benefit from sufficient DWSs and digital servicescapes. Hence, the methodological approach and data collection techniques is of importance.

The methodological approach and data collection techniques has been developed throughout the work. Therefore, the following questions presented in the beginning of the chapter contributed in a valuable way to work out a research methodology: i) what methodological approach is best suited for the work?, ii) What kind of data will be appropriate to collect within the chosen approach?, and iii) How will the data be analysed in the context of the selected method and will it influence the data collection?

Previous research was not only useful but necessary as it brought insights, knowledge and ideas to the work with the phenomena in focus. This is mainly due to the fact that research is based on what other scientists contribute with their research, experience and methods. Hence, previous research brings different perspectives into the research. Instead of just using one 'best' methodological approach different approaches were used to get a broader perspective, as well as deeper insights of the phenomena. In line with the aim of gaining broader and deeper insights of the phenomena, different kind of data was collected. The data collection was carried out through surveys, literature review, and focus groups. The data was sorted, analysed and interpreted, and during the research different methods were applied. As the work progressed a need grew for gaining insights from additional perspectives with the consequence that data was subsequently added. This added data contributed to a deeper knowledge of the phenomenon and the context it occurs in.

In order to summarise, it must be stated that when working with research it is of great importance to ensure that everything is performed in a rigorous manner within the demand for validity and reliability in research. Yin (2015) explains that it is important to ensure trustworthiness throughout scientific work and this can only be achieved through work performed with a high validity and reliability. Merriam and Tisdell (2016) claim that it is a challenge to ensure that the results meet the demand for high reliability and validity because they are not only dependent on the collected data but also how they are interpreted. In addition, it must be mentioned that according to Creswell (2014), it is a challenge to find the right respondents to participate in research. Here the researcher, for better or worse, can have a great influence and therefore high accuracy is recommended. Regarding this thesis, the research is based on five papers where focus groups, surveys, and a literature review were performed. In order to meet the demand for reliability and validity a mix of methods and different sources to collect data was used. In addition, P1 and P2 were developed together with one researcher and P4 together with a second researcher. The other researchers' perspectives helped to ensure the interpretation of the data. The mix of methods, the use of multiple

sources to collect data, and working together with other researchers helped to prevent bias. It must also be noted that in the work with the focus groups the researchers selected one young elderly for each focus group who in turn put together the participants of the focus groups. This is to ensure as little impact as possible from the researchers.

Finally, some words to respond to the questions regarding the methodological approach, listed in the beginning of this chapter:

- What methodological approach is best suited to the work?
- What kind of data will be appropriate to collect within the chosen approach?
- How will the data be analysed in the context of the selected method and will it influence the data collection?

The answers to the questions are:

- The first questions raised concerns on which methodological approach is best suited for the work and the answer is that the multiple approaches used turned out to be a fruitful path. This then enabled illumination from different perspectives and with diverse approaches and therefore provided insights which would have been hard or impossible to achieve otherwise. Here the idea of the hermeneutic circle, with its iterative process to gain insights, was helpful since it outlines a way of gathering more data for deeper understanding.
- The second and third questions were about how to collect and analyse data within the context in focus. Here it proved beneficial to collect data from different sources and using various methods. The motive is once again that with the help of multiple methods, it became possible to approach the research question from different perspectives, thus creating deeper insights for the intent of responding to the purpose and research goal of the thesis.

After discussing methodological issues and concerns in this chapter, the next aspect to highlight is what other researchers have achieved. Hence, it will be discussed in the next chapter.

3. Digital wellness services and young elderly

"Born to move"
- Creedence Clearwater Revival -

In this thesis, the aim is to justify and work out arguments that wellness can be formed and maintained with digital services, called DWSs. So far, the thesis has built a basic understanding of the problem area and summarised the results of six studies. This gave us a synthesis of the research question: How can a digital servicescape enhance young elderly's use of Digital Wellness Services (DWSs)?, that will be answered at the end of this thesis. The data collection techniques used for the studies with young elderly is a combination of literature reviews, surveys and focus groups. So far, the conceptual substance of the digital servicescape has been established as a foundation 'to move' for future work on actually building the necessary platforms for the digital servicescape and DWSs. This chapter will present details of the knowledge essential for creating a digital servicescape.

This section covers DWSs, young elderly as users, information systems, digital servicescape background, and summary.

3.1. Digital wellness services

This part focuses on DWSs that constitute wellness services provided in the digital servicescape. DWSs differ from other kind of wellness services as they are accessed through digital devices and wellness technologies often include self-tracking features (Kari & Rinne, 2018; Makkonen, Frank, Kari, & Moilanen, 2012a, 2012b). McFedries (2013) claims that technology has become more and more popular for an increasing number of people. However, Carlsson and Walden (2017a) state that wellness technologies are mostly developed for younger people including people who still are working. It is emphasised that family, friends, and society can, to some extent, be considered as stakeholders as they can benefit from fully functioning DWSs. This can be accomplished by raising the young elderly's quality of life and this in turn may reduce the need of support from relatives, friends, and society (Carlsson & Walden, 2017b, 2018; Walden & Sell, 2017).

The advantages of DWSs were enabled by the rise of digital devices. The increasing average age in many countries creates both opportunities for developers and service providers but also raises the expectancies of the services provided. In order to meet this, DWSs can play an important role. However, it is important to the size of the young elderly market, as well as

how many individuals who could benefit from DWSs. The young elderly represents 18 – 23 percent in most EU countries and statistical estimates show that the population will be about 97 million EU citizens by 2020 (Eurostat, 2017). In Sweden in 2017, the group of young elderly consisted of more than 1.7 million people and the group 80 and older is expected to increase by 50 percent over the next 10 years (SCB, 2018). In Finland, the group of young elderly is expected to increase by 22.6 percent by 2020 (Statistics Finland, 2017). According to the Swedish Association of Local Authorities and Regions' annual economic report the people outside the working age, young and elderly, is significantly increasing which considerably will put pressure on the economy (SALAR [Swedish SKL], 2018). By systematic application of digital technologies, healthcare costs can be reduced by up to 25 percent over a ten-year period. By 2025, this would represent a gross saving of SEK 180 billion compared to an unchanged cost trend (McKinsey & Company, 2016). In addition, they state "Individuals are looking increasingly active for information on health on the Internet, social platforms and associations where different patient groups interact are becoming more common. It creates new opportunities to reach specific groups that need information or care. Even technical tools and apps that help people keep healthy create great social benefits and, in the long run, cost savings because they require less care" (McKinsey & Company, 2016, p. 12). The figures and statements indicate a large and growing market for DWSs and show the potential for developers, providers, society and in particular for the young elderly who can benefit from the DWSs. In this context, it must also be mentioned that those suppliers who succeeded in attracting young elderly as loyal customers have a customer group that they can continue to work with as they grow older.

Visser et al. (2018) present a longitudinal ageing study of Dutch men and women aged 55 to 85. The result shows that a healthier lifestyle, following official international lifestyle recommendations for the age group, benefits them by improving their physical, psychological, cognitive and social functions. In addition, they claim that only one out of five participants in the study had a healthy lifestyle and therefore it was important to make them aware of the benefits of a healthy lifestyle and encourage them to change towards a healthier path. The American Heart Association (Lee et al., 2018) claim that a physically inactive lifestyle among women (18,289 participants and mean age of 72.0 years) is as dangerous as smoking and can be very harmful to them. Crowley, Pugliese, and Kachnowski (2016) have found that using wearable devices significantly increased the number of hours slept, although it gave no significant change in physical activity. They explain the discrepancy with the increased interest for wellness among the research participants. Findings from Karolinska Institute (KI) (2,500 elderly Swedes aged 65 – 84 participated) show that physical wellness routines will have positive

long-term effects on their health (Benka Wallén et al., 2014). However, they stress that the physical exercise should be intensive as otherwise the effect can be less or completely absent. Another important aspect that affects wellness concerns the social need to be and stay socially connected as well as the need for mental training (Gates, Sachdev, Fiatarone Singh, & Valenzuela, 2011; Vance, 2012). The importance of cognitive and mental training is put forward by Vance (2012, p. 30) who claims that "Throughout our lives, we have countless opportunities to enhance our cognitive reserve and mental abilities. Such opportunities allow us not only to possess a better chance at successful cognitive aging, but to engage in life more as well". DWSs can thus play an important role in enhancing the young elderly's chances of an active and satisfying life. Studies conducted by Carlsson and Walden (2015, 2017a, 2017b); Häkkilä, Colley, Inget, Alhonsuo, and Rantakari (2015); Walden and Sell (2017) show digital devices with DWSs can play an important role in building, supporting and sustaining daily wellness routines. DWSs must be designed and implemented to aid and support young elderly to increase their ability to avoid functional impairment. The advantages of DWSs are that they are easy to distribute, maintain and further develop. However, to fulfil this there is a need for a holistic approach on DWSs for young elderly.

An important part when developing and providing DWSs to young elderly is to understand the concept of wellness. In the introductory chapter, several aspects were highlighted. Wellness can be seen in terms of wellness dimensions and researchers e.g. Adams et al. (1997); Annear et al. (2014); Cooke et al. (2016); Dunn (1959); Roscoe (2009) have suggested different and multiple numbers of holistic wellness dimensions to consider. However, in order to delineate these, this thesis adopts physical, social, intellectual and emotional wellness dimensions as they mirror functional impairments. According to Üstün and Kennedy (2009), functional impairment implies disability, activity and mental limitations for an individual. Hettler (1980) defines physical wellness as covering the point that sustains and increases fitness, flexibility, and strength. He includes pursuing appropriate medical care in order to find and avoid illness, physical self-care, nutritional aspects and level of activity. Durlak (2000) proposes two physical wellness domains.

The first dimension is about physical indices (e.g. muscles and blood pressure), and the second concerns behaviour (e.g. eating and exercising). In addition, physical wellness comprises perceptions and expectations of wellness. Social wellness emphasises an individual's relation to others. It also includes relations to the common welfare environment such as contribution to society and volunteer activities (Hettler, 1980).

The second dimension, social wellness, comprises individuals living in harmony with others and oneself. Adams et al. (1997) argue that social wellness contains cooperation in form of giving and receiving support from others. According to Durlak (2000) social wellness must include

competencies such as social skills, altruism, conflict resolution, social isolation and social anxiety. Social wellness can be regarded as the effort to achieve balance in life, including interaction and integration between people, nature and society.

The third dimension, emotional wellness, is about awareness and acceptance of feelings. These feelings can be affected by the environment where factors such as other people, society, nature as well as you yourself play a vital role (Hettler, 1980). Renger et al. (2000) argue that the individual's self-image is central as it influences the level of anxiety, depression, well-being, satisfaction, and optimism. These aspects, to some extent, influence an individual's ability and level for self-control. Adams et al. (1997) argue that an individual's self-concept and self-esteem are important because they affect his or her self-identity and thus the image individuals have of themselves. This means that emotional wellness includes several aspects of the control of feelings where the ability to act independently and interact with other people is of importance.

The fourth and final dimension, intellectual wellness is defined by Hettler (1980) as an individual's abilities and skills to achieve a satisfying life. It includes the willingness to engage in creative and stimulating activities. Adams et al. (1997) argue for the importance of the right level of intellectual stimulation since both too little and too much stimulation can be harmful and thus generate negative consequences. An individual's orientation and potential for personal growth and their ability to be creative are important influences on intellectual wellness (Renger et al., 2000). In addition, Crose, Nicholas, Gobble, and Frank (1992) argue that intellectual wellness is affected by people's education, mental status, cognitive smartness, and interest in and attitude towards learning. In conclusion, intellectual wellness contains several aspects where the most central are individuals' level of preparedness for intellectual activities and stimuli. Altogether, the four wellness dimensions, separately and together, play an important holistic role when developing and providing DWSs aimed at the young elderly. All these aspects must be considered in order to successfully address the young elderly's requirements regarding DWSs. DWSs are provided on computers, tablets, smartphones and wearables where apps enable the user to benefit from the services offered. The digital devices e.g. Fitbit, Polar, Garmin, Apple, Samsung, and Sony together with the services provided through apps can help young elderly to build wellness routines into their daily lives and help sustain these routines to build the foundation of a better, longer and healthier life. Some images of devices and apps are included below to give an overall impression on what is currently available. Figure 10 shows Fitbit Ace Activity Tracker. On the inside of the bracelet (not shown on the images), there are different sensors that measure, for example, pulse and blood pressure. The outcome of the measurement can be visualised on the device but also sent through the Internet to other devices and possibly even to health care services.

Figure 11 and 12 show a few more examples of similar products from other brands.

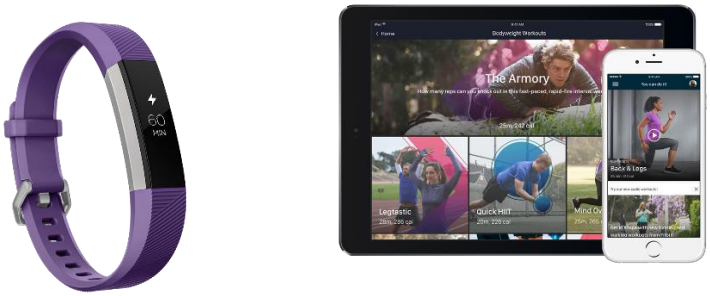


Figure 10. Fitbit Ace Activity Tracker and Fitbit Coach Personal Training App (Fitbit, 2018)

Figure 11. Polar A370 Fitness Tracker with Continues Heart Rate (Polar, 2018)

Figure 12. Apple Watch Nike+ (Apple, 2018)

Figure 13 shows examples of apps for wellness. Some of the apps focus on a combination of all wellness dimensions, physical, social, intellectual, and emotional, while others focus on one such as physical training.

Figure 13. Wellness apps (Google Play, 2018)

Figure 14 shows examples of wellness training for the brain. They aim to train the brain to keep it sharp and alert.

Figure 14. Example of apps that offer training of the brain (Google Play, 2018)

Figure 15 shows one app providing activities for seniors and one providing senior care. The two images to the right show examples of what can be found inside the apps.

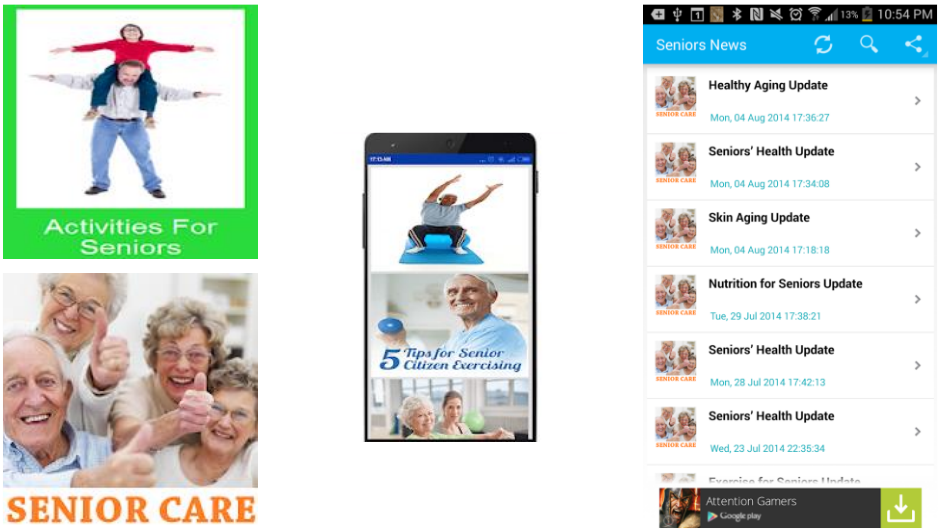


Figure 15. Examples of apps and what to find in them (Google Play, 2018)

As this thesis focuses on the young elderly, one option was to search for apps aimed at this particular group. However, the search generally provided suggestions aimed at seniors, elderly or old people and not young elderly. Therefore, the next part describes and shows how DWSs provided by Fitbit Alta HR work for a Swedish woman belonging to the group of young elderly. Figure 16 shows images of Fitbit Alta HR (to the left) and 'An important note' addressed to female users by Fitbit (to the right).

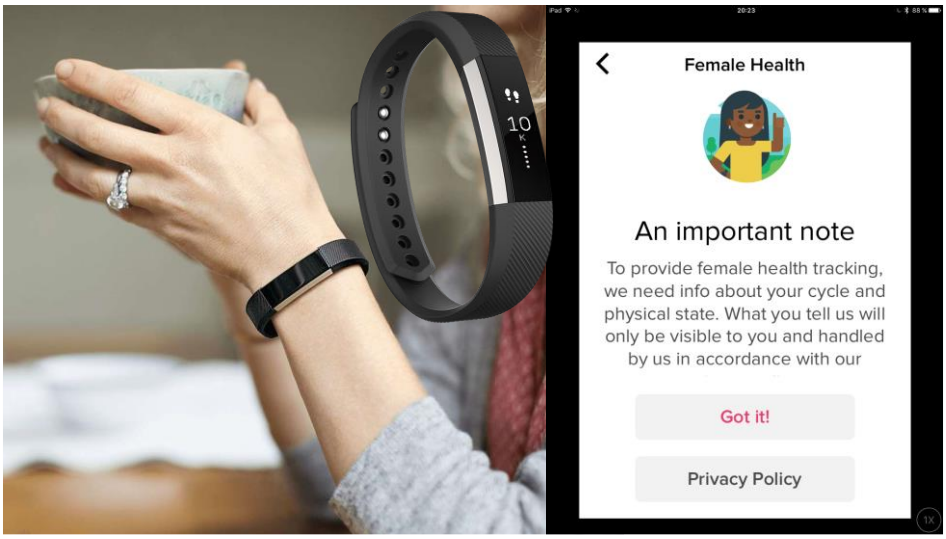
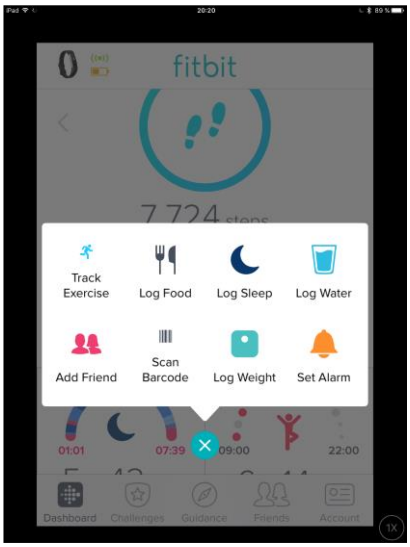


Figure 16. Fitbit Alta HR (Fitbit, 2018)

Figure 17 shows some options the user can benefit from e.g. track exercise, log sleep and add friends. The image to the right shows information that the Fitbit user can receive about how many steps and kilometres she has walked, for how long she has been walking and how many calories were burned.



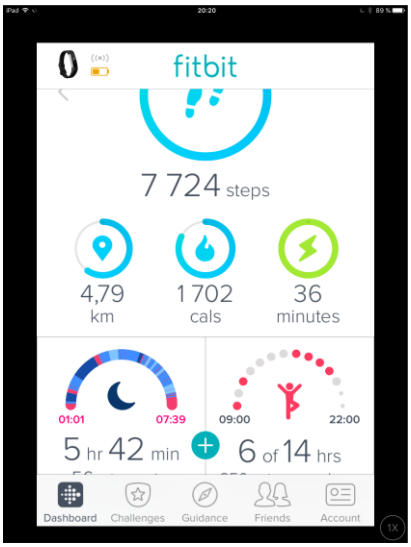
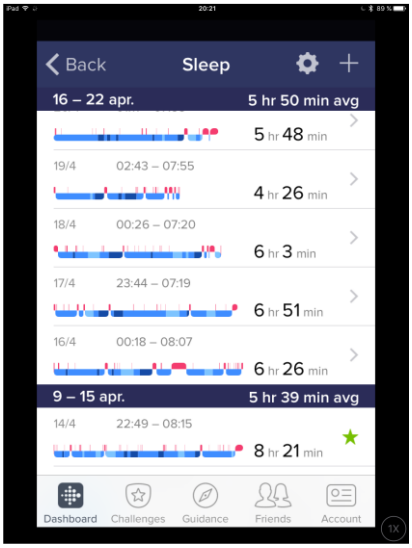


Figure 17. Options and information provided to the user by Fitbit

Figure 18 shows information the user can benefit from regarding her sleep. The image to the left shows information of sleep duration and the image to the right shows sleep stages during one particular night.



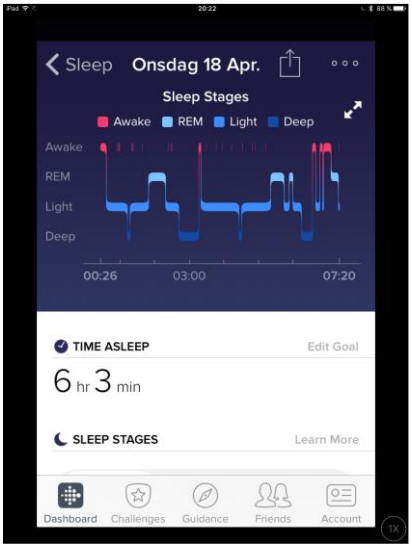


Figure 18 Images of the young elderly woman's sleep

Figure 19 shows information the user can benefit from regarding her heart rate and exercise. The image to the left shows information of the heart rate and cardio fitness for a woman of her age and the image to the right shows her amount of exercise and how much fat was burned during the last week.

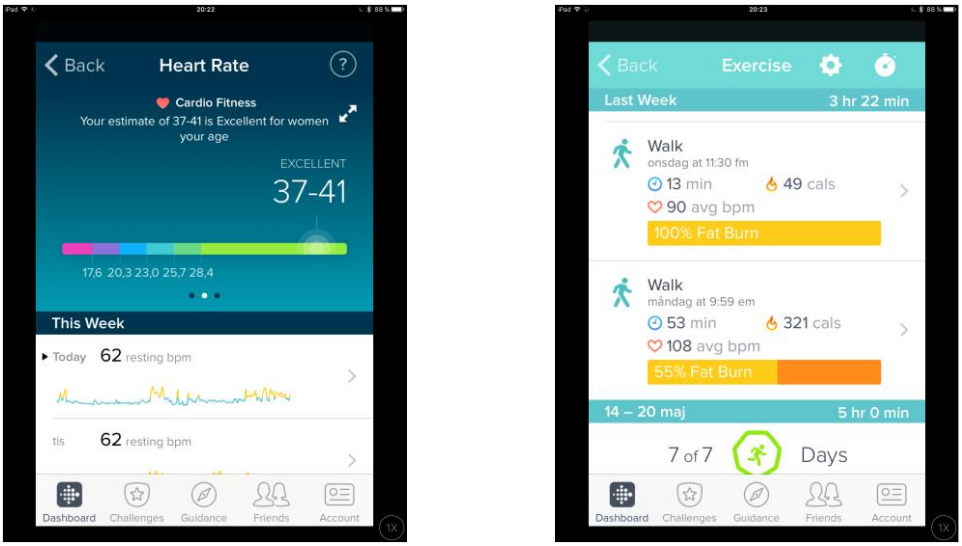


Figure 19. Images showing of the heart rate and cardio fitness of the young elderly woman and her amount of exercise

The images (figure 10 – 19) show different aspects of DWSs provided in a digital servicescape performed by digital devices. They are developed and delivered by several different actors and they represent only a fraction of all who are active in providing DWSs. Some of the actors focus on meeting the demands of the physical wellness dimensions, while others focus on social, intellectual or emotional dimensions, or a combination of the dimensions.

Regarding apps and the use of them the prices differ a lot. Many of the apps are free to download, but can include advertising or costs if the user wants to access premium content. Some of them remain free and some are free for a test period and then the user will be charged and the cost can be from under one USD and upwards. This way of doing business is known as the *freemium model* (Marketing News, 2012). Some apps have a monthly subscription fee in June 2018 e.g. Spotify SEK 99, Storytel SEK 169, and Weightwatchers SEK 195. Research conducted by Carlsson and Walden (2018) shows that citizens on the Åland islands, an autonomous region of Finland, are willing to monthly pay EUR 19.95 for a selection of DWS apps.

In this section, aspects of DWSs performed in digital servicescapes have been highlighted. As shown in figures 10, 15, 16, 17, 18, and 19 the user

interface constitutes a part of a digital servicescape, however a digital servicescape contains much more than what appears on the user interface. Therefore, when developing and providing DWSs and digital servicescape, it is vital to consider individual user aspects such as needs, demands, physical status, and cognitive ability in order to be successful. Knowledge essential to build well-working digital servicescapes has so far in this thesis been in focus and next the field of young elderly as users will be presented.

3.2. Young elderly as users

This part focuses on young elderly as users of DWSs. It starts with implications of research on the target group and continues with the target group values. When Internet started to be regarded as an important marketing communication tool it was also suggested that it would bring new opportunities to marketers (Heinen, 1996). Brynjolfsson (1994) predicted in the mid-nineties that the development of computers indicated an enduring growth in the future of the value of consumer surplus. Some even saw a pessimistic and dark scenario and thought it could lead to the death of traditional marketing (Holbrook & Hulbert, 2002). However, the death was not to come. Instead the Internet, with its commercial potential, has provided new business opportunities. One is known as "the Long Tail" where products which were not among the bestsellers found a new market (Anderson, 2006, 2009, 2012). Brynjolfsson, Hu, and Simester (2011, p. 1384) explain the long tail as "Most marketers have traditionally been dominated by a few best-selling products. However, Internet marketers have a potential to increase the share of sales generated by niche products". This creates an interest in research on the physical and the digital world.

Achrol and Kotler (2012) explain that for people who grew up in the pre-digital age it was impossible to even imagine the opportunities the digital world could offer. For young people, the Internet is as obvious and natural as the radio was for those born in the forties and fifties. To young people the Internet is more or less taken for granted as a natural part of the society and of their culture. However, although young elderly also use the Internet they are more cautious and careful before they accept, and adopt the digital services provided (Cockrell et al., 1998; Parment, 2014). Somehow this gives the impression that what Keen (1991, p. 221) in the early nineties stated is still relevant when he expressed that "The IS profession is not renowned for its insights on human relations". This approach to the field of IS points out a possible link problem between technology and users, and further that there might be a risk that those who work with IS do not fully understand the user's demand and therefore a need for solutions to overcome the gap emerges. This leads to an interest

in IS, the users of the services provided and the culture that they live and act in.

Today virtual communities provide a way for individuals to belong to digital networks and offer them new opportunities to develop relationships with other people. The opportunity to belong to virtual networks is a relatively new phenomenon and was not an option for young elderly when they were young. However, interaction over virtual networks is now, for most of them, a natural part of their everyday life. Rheingold (1993, p. 5) states that virtual communities "are social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace". This indicates that the social aggregations occur and emerge between people at a meso-sociological level that lies between individuals' micro-level and social systems' macro-level (Kozinets, 2010).

The phenomenon of an individual's identity and its relation to society can be described as dialectic where the identity emerges in relation to society (Berger & Luckmann, 1991). Regarding the relation to others it can be mentioned that one of the non-profit organisations working for senior citizens in Sweden is SPF-Seniorerna, the Swedish Association for Senior Citizens, with approximately 270,000 members (SPF-Seniorerna, 2017). Some of their member services are only available on the Internet (e.g. pod radio, and a web shop). The organisation also uses their homepage to offer members different health-related services that can foster a long, rich and healthy life. In terms of wellness they describe four pillars for good aging and wellness. They argue that these pillars should be a part of the everyday routines. The first concerns physical activity where they argue that good mobility enhances the ability to live the life people want to. In addition, regular physical activity, balanced training and good eating habits also help to prevent injuries and accidents. To encourage members to engage in physical activity they offer opportunities to join other members for a walk or a training session. The second pillar is about good eating habits. They claim that good eating habits are not just about nutrition and energy but are also about how the food affects the environment and climate in a broader perspective. Above all, the meal can be a source of joy, celebration, enjoyment and fellowship. Therefore, they offer to cook, eat together or drink coffee, both in everyday life and on special occasions like parties or birthdays. The third pillar pinpoints social community. They state that for most of people, community and social relationships with other people are of great importance to health and quality of life, regardless of age. Therefore, they offer accessible meeting places as well as opportunities to communicate and offer help when social relations are getting fewer. The fourth and last pillar deals with having something meaningful to do and be occupied with. They argue that feeling needed and having positive experiences is something that is important to all. Therefore, they claim that

participation and influence in society as well as having control over people's own life situation is important for healthy and happy aging. In addition, they say that commitment to politics, culture or society brings about stimulating challenges and therefore provides everyone who wants with a meaningful task to work with.

The pillars show how SPF-Seniorerna forms a context for their members to be a part of. In addition, it provides an insight on how they use digitalisation to communicate with the members and this enables members to interact with each other. However, and more importantly, it shows how they use digitalisation to provide DWSs to the members. Thus, they offer a context for participation, provide meaningful tasks to work with, put people in contact with each other to arrange a walk or a dinner, and also help people find somebody to interact with. Overall, they try to support and influence people's everyday routines to help and encourage them to sustain a good life and thereby contribute to people's wellness. In conclusion, this indicates the importance of digitalisation as a tool for providing DWSs to young elderly in order to enable and encourage them to a life of wellness.

Individuals born in a location where people share the same history and culture could according to (Mannheim, 1952, p. 290) be one way of defining the distinction of generations and, in addition, he stated that the "sociological phenomenon of generations is ultimately based on the biological rhythm of birth and death". Eisenstadt (1956) stated that age is probably the most essential parameter for classifying individuals in different generations but added that descent and life-stage plays an important role. O'Donnell (1985) states that a generation includes individuals born at almost the same time, regardless if they have kinship or not. Kertzer (1983) continues from what Mannheim and Eisenstadt propose and argues that generation and age are linked to each other but shall not be seen as one principle. He adds that generational relations are essential to society and argues that this does not necessarily mean that different generations are in conflict with each other. Instead, values can be transferred from one generation to another. This transfer can occur between parents and children as well as within society. Parment (2011) claims that it is vital to be aware that not only generational belonging is of importance but also that culture, geographical location, political interest, and professional association can play a role. Hofstede (1994, p. 17) claims that "Generation differences in symbols, heroes, rituals, and values are evident to most people. They are often overestimated". He mentions that even the ancient Egyptians complained of young people's lack of respect for the values of older generations.

As this thesis focuses on young elderly the generation of Baby Boomers have to be highlighted. The generation of Baby Boomers were born approximatively between 1945 and 1960 (Christensen & Suokannas, 2010; Evans et al., 2009; Parment, 2008, 2013; Solomon et al., 2013), and

represent today the majority of the young elderly. Roberts (2012) argues that the Baby Boomer generation is the first generation who had higher income, more opportunities for consumption, and had a better standard of living than the previous generation. He continues by stating that the Baby Boomers were not only had these advantages but were also aware of it.

Parment (2013) found that the Baby Boomer generation values retail experiences and in-store services higher than the generation he describes as the 90s generation, also called the Y-Generation. He (2013, p. 189) states that "For Baby Boomers, the purchase process starts with a retailer the consumer trusts, who gives advice for choosing the right product, while for Generation Y, the purchase process starts with choosing a product". This view of the Baby Boomers in comparison to other generations indicates a social identity which may be a seen as a paradigm shift. According to Kuhn (1997) a scientific revolution, also known as paradigm shift, occurs when anomalies arise that cannot be explained and understood by the established paradigm.

People want to have a long, good and eventful life. Over the last century, more and more people live longer. Benka Wallén et al. (2014) state that about 2 million out of Sweden's approximately 9.6 million inhabitants are 65 years of age or older (Note. In January 2017 the 10 million mark was passed). The increasing number of people who reach higher ages, creates both a demand and a market for services that are provided by society, companies, organisations, family, and friends. According to Carlsson and Walden (2015) this also includes the group of young elderly defined as the age group 60 – 75 years. They (Carlsson & Walden, 2017a) state, that the group of young elderly constitutes about one fifth of the population in most countries in the European Union. The group of young elderly belong to a generation that has been ascribed several labels such as Baby Boomers, the 55-plus, the Grey Market, Senior Citizen, and the Vital Seniors (Parment, 2008, 2013). In this thesis the concept young elderly will be used to describe the aforementioned group of Baby Boomers born roughly between 1945 and 1960 according to Christensen and Suokannas (2010); (Evans et al., 2009); Solomon et al. (2013).

Alvesson (2013) argues that social identity is of great importance since it can describe aspects of how individuals function. He continues by claiming that social identity provides community, cohesion and a willingness to help other people. This shows that social identity can be seen as belonging to a generation, a group, a community, or an organisation. Hence, sociological research is of interest.

3.2.1. Target group values

The question of how to motivate individuals as well as groups has received considerable interest from researchers and practitioners. According to Jordan (1952, p. 76) "Motivation is at the heart of the learning process" and

he refers to and agrees with Woodworth (1947) who defines motivation as "A state or a set of the individual which disposes him for certain behavior and for seeking certain goals". Marklund (2017) argues that motivation is essential for people to be physically fit as well as living healthier and longer. Hence, motivation is a foundation for DWSs.

A pioneer in this field is Abraham Maslow who in the 1940s developed a theory that has become known has Maslow's hierarchy of needs. The hierarchy of needs includes five levels and he (Maslow, 1943) stated that human beings are always striving to satisfy their needs and that basic needs have to be satisfied first before we are motivated to attempt to satisfy the needs on the next level in the hierarchy. On the first, basic level *Physiological needs* are found. They deal with what is necessary for humans to survive (e.g. air, water, and food). Sexual instinct can be added to this level as it can be regarded as a prerequisite for the survival of the species. Once the first level is achieved the next level, *Safety needs* (e.g. personal security, financial security, health, wellbeing), will be in focus. *Belonging needs* (e.g. friendship, intimacy, family) are on the third level and on the second highest level are *Esteem needs* (e.g. to feel respected, accepted, recognised). Finally, on the fifth level, *Self-actualization needs* (e.g. people's need to express themselves) can be found. In the late 1960s Maslow (1973) added a sixth level, Self-transcendence need (e.g. a holistic level of human consciousness in relation to the world including other species and cosmos). Regarding the young elderly it is of interest that the wellness dimensions, such as physical wellness, can be connected to the safety needs in the hierarchy of needs as health and well-being is closely related to wellness. This in turn shows the importance of enabling the young elderly to be physically active as it in turn affects the other dimensions since they are based on a whole and not individual parts that stand for themselves.

However, it must be pointed out that Maslow´s hierarchy of needs has met criticism. Neher (1991) argues that a certain degree of deprivation can be considered as healthy and that Maslow was not able to explain when a certain need is achieved and thus fulfilled. Researchers like Hunt and Hill (1977); Wahba and Bridwell (1976), and Wofford (1971) presented the problem of finding empirical support for what Maslow proposed and Wahba and Bridwell (1976, p. 224) summarised the criticism with "There is no clear evidence that human needs are classified in five distinct categories, or that these categories are structured in a special hierarchy". Zimbardo and Gerrig (1996) claim that people express power, dominance, and aggression and this has to be taken into account when discussing Maslow's strict hierarchy as they can have an important influence on people's motivation. Even though the hierarchy of needs has been criticised, it must be emphasised that motivation is an important factor in encouraging young elderly to take part in offers that can have positive outcomes, such as wellness. In connection with the discussion on

motivation, Herzberg, Mausner, and Snyderman (1959) state that there are factors that motivate people and bring them satisfaction in their work. The theory is known as the two-factor theory (also known as Herzberg's motivation-hygiene theory) and distinguishes between: i) motivators (e.g. interesting work, recognition, responsibility, having an opportunity to do something meaningful) and ii) hygiene factors (e.g. salary, benefits, job security, work conditions). The two factors can, according to the authors, occur in four combinations:

1. High Hygiene / High Motivation (Employees are satisfied with and feel motivated in their work)
2. High Hygiene / Low Motivation (Employees are satisfied with their work are not highly motivated)
3. Low Hygiene / High Motivation (Employees are motivated in their work but are not satisfied with the work)
4. Low Hygiene / Low Motivation (Employees are not satisfied with their work and do not feel motivated)

Herzberg et al. (1959) argue for focusing on both factors as both are of importance. Therefore, aiming to reach a 'high' on both factors will reduce or eliminate dissatisfaction among employees. However Herzberg (1968, pp. 59-62) claims that "Not all jobs can be enriched, nor do all jobs need to be enriched" but still he argues for job enrichment since the return on investment in the employees will lead to greater motivation. Therefore, he suggests steps towards job enrichment by: i) removing some controls while retaining accountability, ii) increasing the accountability of individuals for own work , iii) giving a person a complete natural unit of work (module, division, area, and so on), iv) granting additional authority to an employee in his activity, job freedom, v) making periodic reports directly available to the worker himself rather than the supervisor, vi) introducing new and more difficult tasks not previously handled and vii) assigning individuals specific or specialized tasks, enabling them to become experts. The two factors are something that has affected the young elderly during life and working years. This concerns primarily people who still work but since some of the young elderly are still active in the labour market it also includes them. In addition, for both the young elderly and the employers, it may be of interest that they are in good physical shape and feel well. After retirement, their situation changes as work-related goals are no longer available. This in turn can affect their level of motivation in both positive and negative ways. Some may feel that they are no longer needed while others are motivated to look for new opportunities to participate in activities they previously had little time for. Therefore, it is important to understand what motivates the young elderly so they even after retirement feel satisfied with their lives and motivated to go on.

How the young elderly's motivation is influenced can be described in various ways and in addition to Herzberg's two-factor theory Schachter and Singer (1962) suggest a two-factor theory of emotion where they propose that emotions are based on two factors: i) physiological arousal and ii) cognitive circumstance. Physiological arousal occurs when people feel emotion and as this happens it creates a reaction and if the brain is unsure how to interpret the emotion it cues it with a cognitive label. The authors (1962, p. 398) conclude that if the individual has no explanation to a physiological arousal he will label his feelings in the cognitive terms available to him. In addition, if the individual has a "completely appropriate explanation" there is little or no need for a cognitive label. Finally, they state "Given the same cognitive circumstance, the individual will react emotionally or describe his feelings as emotions only to the extent that he experiences a state of physiological arousal".

Within the discourse on motivation and the various factors that influence human behaviour are aspects of intrinsic and extrinsic motivation (Flodén, 2013; Jordan, 1952; Ryan & Deci, 2000a). Regarding the latter authors the two types of motivation have been extensively studied. A lot of interest was put into why human beings as well as animals behave the way they do (Sansone & Harackiewicz, 2000). They describe that early on researchers focused on extrinsic motivation suggesting that the behaviour is caused by a desire or a need to achieve a certain outcome (e.g. a reward or avoiding a punishment). Regarding the young elderly this can connect to the reward of having a good life and to do what is possible to minimize the risk of getting ill. However, later research began to recognise engagement from humans and animals which could be linked to factors as interest, satisfaction, and enjoyment. Consequently, researchers began to argue for an intrinsic motivation. However, not all researchers agree, but instead propose that it could be a myth (Eisenberger & Cameron, 1996, p. 1162). They state that "Our analysis of a quarter century of accumulated research provides little evidence that reward reduces intrinsic task interest". In addition, and regardless to the views on intrinsic and extrinsic motivation, it must be said that it is of importance to encourage and motivate the young elderly to achieve wellness in accordance with their own wishes and chances to achieve their goals.

Likert (1961) proposes concepts regarding how to motivate people in a group. He raised the importance of efficacy processes, motivation and organisational overlapping goals, as well as fast feedback. Katz (1964, p. 131) discusses what Likert (1961) proposes and adds patterns and types of motivation to consider in organisations. He highlights three questions he claims are of interest: i) what are the types of behaviour required for efficient organisations?, ii) what are the motivational patterns which are used and which can be used in organisational settings?, and iii) what are the conditions for eliciting a given motivational pattern in an organisational setting? In response, he states that the behavioural

requirements include the need to encourage people to enter and remain in the system, they have to be allowed to perform their role, and there must be room for spontaneity and co-operation. Many of the young elderly have over the years been members of various organisations such as unions and non-profit organisations, and therefore have good knowledge of how different organisations work. This experience also gives them some insight into how members of organisations are motivated. For example, Rotary that has a motto "Service above self" can be mentioned, a club in which I am a member and therefore have a good insight into, and where all work is done on a voluntary basis. Within Rotary there are many young elderly who happily and enthusiastically work with different charity projects, and there their experience and networks are used to perform each project in the best possible way. In order for the projects to be successful, members are prepared to spend their time, to co-operate, and are given the opportunity to perform their role. Hence, the organisational setting must be motivating for the members as they otherwise would be less interested in participating in the projects.

However, Katz (1964) identifies some problems with the approach of Likert (1961). He (Katz, 1964) sees one problem that a group member's voice sometimes has to go through several levels in an organisation and that the approach mostly focuses on technical and task problems within the organisation. There is also a risk with motivational problems in large organisations and that group processes generate their own dynamic which may cause group members to make decisions beyond what they have permission to do. In addition Likert (1961, p. 247) claims that in conclusion "Two or three years is usually required to introduce a major technological change in an organization smoothly and without excessive stress". He notes that what commonly requires most time is people, not the technological process. This timeframe was probably the case when the young elderly were young and entered the labour market. However Virilio (1986) claims that not too long ago it was an advantage to be fast but now it has proved to be a necessity. In his book he introduces the term dromology which originates from the Greek word dromos which can be interpreted as ride, journey, and speed. He (1986, p. 173) states that "The loss of material space leads to the government of nothing but time… The violence of speed has become both the location and the law, the world's destiny and its destination". This, even though it stated before the breakthrough of the Internet, gives an image of speed becoming increasingly important. For the young elderly the breakthrough of the Internet can have positive as well as negative influences. On the one hand, Internet provides possibilities to take advantage of for example wellness offers, but on the other hand it can cause stress through the overload of information and available options which can lead to reluctance to take up, for example, wellness offers.

For developers and providers it is essential to understand the target group's values as in this case the young elderly. Blackburn, Scudder, and Van Wassenhove (1996) claim that speed and time are of great importance in developing software as they affect the productivity. This in turn affects how competitive the company is. Moreover, they argue that it is more important to invest in talented employees than technology. More than twenty years after his book on dromology, Virilio (2007, 2010a) discusses the development of society and argues that speed is now part of our everyday lives as it is possible to share events in real time. He adds that this in turn means that the time when people had a private life is over as people live their lives more or less in public view, whether they want to or not. Virilio (2010b) claims that people in the finite world must realise that omnipresent networks can lead to omnipresent problems for people. This in turn, can among other things, affect people's motivation. Hauer (2017, p. 155) discusses what Virilio (1986, 2007, 2010a, 2010b) argues and he summarises that "…in the age of general interactivity where electronic cooperation and collective intelligence could turn humanity as a social corpus not into single people, but into a single mass media corpus". For the young elderly this view can provide an opportunity to co-operate with, for example, wellness providers and developers as the young elderly, with all the experience they possess, can be regarded as talented co-workers. This creates an opportunity to develop together with the young elderly, and not just for them. In turn, this creates the prerequisite for enhanced wellness services.

Along with the development of the Internet, an interest in research on human motivation and behaviour on the Internet emerged. Svatosová (2013) states that there are differences between various age groups in motivation for online shopping. Her research shows that among the age group 18 – 35 they were mostly motivated by goods that are exclusive, special or cost-effective. For the groups over 35 and under 18 motivation looks different as they are more concerned with the convenience online shopping can provide and that it can meet their curiosity. People's motivation is linked to their perception of a website and this depends on their view of the website in terms of professionalism, content, and physical presence (Mavlanova, Benbunan-Fich, Koufaris, & Lang, 2015). As for the young elderly, this shows the importance of insights on how to make them curious about, for example, DWSs and shaping the offer so that it meets and responds to their curiosity.

Regarding age in combination with the Internet, Furini (2014) discusses digital natives versus digital immigrants where the first group were born in the Internet era and the latter are people who were born before and therefore had to adopt and adapt to the Internet. This view of digital natives and digital immigrants provides an aspect of generations where the young elderly can be considered as digital immigrants due to the fact that they were born and grew up long before the Internet emerged. In

addition, Furini (2014) provides insights showing that digital natives are to be considered as early adopters of new technologies and services and that it probably will affect their behaviour on the web regarding for example trust. In addition, researchers have raised a question if the digital native concept is still relevant (Bayne & Ross, 2007; Bennett & Maton, 2010; Judd, 2018) and Prensky (2009, p. 3) "suggest we think in terms of digital wisdom" instead of generations. The young elderly, however, have a more reluctant attitude to the Internet and therefore the need to build trust is vital.

Hoffmann, Lutz, and Meckel (2014) go one step further and suggest that, in addition to digital natives and digital immigrants, a third group they label as naturalised digitals should be added. The authors' research focuses mainly on how demographics affect web experience and online trust. They (Hoffmann et al., 2014, p. 138) claim that the group of naturalised digitals "are more geared toward familiar brands and recommendations". Therefore, they argue that online services have to be differentiated and shaped in harmony with the target group. In addition, they claim that there is a risk of dividing into target groups based on when people were born without taking into account other aspects. However, the young elderly due to when they were born can never be regarded as digital natives, but some, who for example have the experience, interest and curiosity may be considered as naturalised digitals. In addition, according to Olsson et al. (2017) it should not be expected that people who are at the age of 85 or 95 will be as interested in what the digital world offers as they were at the age of 65. Olsson and Viscovi (2016) claim that older people with greater resources seem to use what the digital world offers more often and with more variation than other elderly. This provides a glimpse of the complexity of dividing people into groups.

Overall, it can be noted that there are different aspects of motivation and some issues have been highlighted in this section. Motivation can be seen as an approach for individuals like young elderly to seek and fulfil goals. This search for and fulfilment of goals can be linked to extrinsic and intrinsic types of motivation. For the young elderly the motivation lies in the reward of a long and healthy life and the satisfaction of avoiding illness and infirmity. The words "it is nicer to get old if you are in good shape" of a young elderly co-worker in research conducted by Carlsson and Walden (2017a, p. 3) captures the motivational motive in a striking way. These words show a motive for the young elderly themselves to do what they can to be in good physical and mental shape for as long as possible. At the same time the person's relatives and friends also benefit from this in terms of maintaining a rewarding and positive relationship. In extension, the young elderly's wellness can also generate benefits for society whose healthcare costs may decrease. This indicates that it is not only the young elderly who are concerned but also other groups who benefit if they are doing and feeling well.

In this section, aspects of young elderly as users of DWSs in digital servicescapes have been highlighted. In order to develop and provide well designed DWSs and digital servicescape, tailored for the group of young elderly, it is important to gain knowledge and thereby understand their background and preferences. Since knowledge is essential to build efficient digital servicescapes this aspect has been the focus of this section and in next section information systems will be presented.

3.2.2. Young elderly in Sweden

Sweden, a kingdom in the north of Europe is the third-largest country in the European Union and has an area of 447,435 km^2, in which about 22 inhabitants/km^2 live (Nationalencyklopedin, 2015). At the end of 2017 the population consisted of 5,037,580 female and 5,082,662 male, in total 10,120,242. About 16 percent of those belonged to the young elderly category (table 5). Further, the retirement age is by the individuals' choice between 61 and 67 years. Consequently, most of the Swedish young elderly are retired from working life (SCB, 2018; Swedish Pensions Agency, 2015).

Table 5. Young elderly in Sweden at end of 2017 (SCB, 2018)

	60-64	65-69	70-74	Total	%
Female	282 417	283 808	284 194	850 422	16.9
Male	282 290	276 584	282 290	814 164	16.0
Total	564 707	560 392	566 484	1 691 586	16.7

Swedish governments have systematically worked with IT and digitalisation. One way to do so was by starting different governmental groups e.g. the IT Commission (in Swedish IT-kommissionen) 1994 – 2003, the IT Political Strategy Group (IT-politiska strategigruppen) 2003 – 2006, the Government IT Council (Regeringens IT-råd) 2007 – 2010, the Digitalisation Council (Digitaliseringsrådet) 2011, and the Digitalisation Commission (Digitaliseringskommissionen) 2012 – 2016. The Digitalisation Commission had the task of investigating the impact / significance of digitalisation in Sweden. These governmental groups wrote many reports that were / are used as decision support documents for different public authorities in Sweden. A new public authority starts on 1 September 2018 in the city of Sundsvall (in the middle of Sweden), and its mission is to develop, coordinate, and to support the digitalisation of the state, municipalities, and the county councils (Regeringen, 2018).

The Swedish labour market is changing largely due to automation, one aspect of digitalisation. Between 2015 and 2035, every second job is likely to disappear. About 2.5 million jobs are affected. "Jobs which require dexterity, originality, artistry, social ability, negotiation, ability to

persuade, and caring for other people have the lowest probability of being replaced" (SSF, 2014, pp. 6-7).

The Swedish population's access to computers was 95 percent (2017) and the access to Internet was 96 percent (SCB, 2018). Eight out of ten, two-year-old children and almost six out of ten over 75 years old use Internet (IIS, 2017). Half of the households have broadband via a fibre connection. Older people do not use digital equipment as often as the younger generations, who use it on a daily basis. Half of workers read their work e-mail during their holiday. Almost everybody under 25 use YouTube. The younger people tend to be more critical towards information they find on the Internet than older people are. Unskilled, unemployed, and infirm people tended not to access civic information on the Internet according to the survey. For payment, many use Internet banks, mobile Bank ID (a Bank identification app that makes digital identification possible), and Swish (a mobile payment app for individuals and business) are used by two thirds of the population (IIS, 2017). During 2017, the use of payment apps was higher than the use of cash (Insight Intelligence, 2017).

The IT use of Swedish citizens, between 55 to 74 years old was as follows: 91 percent use computers, 92 percent use Internet, 67 percent connect to Internet by smartphones, and 34 percent by laptop (i.e. outside their home / work place). The use of IT among 55 to 74 year-olds in Sweden (table 6) shows that approximately 75 percent use it every day and up to ten percent not at all (at least during three months before the data collection)(SCB, 2018).

Table 6. Use of IT, during the last three months, among 55 to 74 year-olds in Sweden 2017 (SCB, 2018)

	Female	Male	Total
Each day	74%	74%	74%
Once a week	10%	9%	10%
At least once a month	6%	5%	6%
Less than once a month	0%	0%	0%
Not last three months	6%	8%	7%
Never	3%	4%	3%

In terms of which online services were most used (table 7) the top three were e-mail, bank services and reading newspapers. Wellness does not feature explicitly in the statistics but nearly half of the young elderly access and use health information services.

Table 7. Use of Internet services among 55 to74 year-olds in Sweden 2017 (SCB, 2018)

Email	83%
Bank service	79%
Read newspaper	76%
Info seeking	71%
Travel service	47%
Health information	46%
Social media	44%
Use for phoning	35%
Upload own created material	28%
Buying	14%
Selling	13%
Use professional social media	9%
Job seeking	9%
Vote about society/politics	8%
View on society/politics	8%
Education	7%

Online shopping is much discussed in today's media, especially to explain the closure of city centre shops. The young elderly mostly make travel arrangements and buy holidays online (table 8 They very seldom buy games (not familiar with online gaming) and do not buy food online since they are so accustomed to buying food in a physical store.

Table 8. Internet shopping among 55 to 74 year-olds in Sweden 2017 (SCB, 2018)

Travel arrangements	39%
Tickets for events	31%
Holiday accommodation	31%
Clothes and sport articles	28%
Books, newspapers etc.	26%
Movie and music	19%
Telecommunications services	18%
Household goods (e.g. furniture and toys)	15%
Drugs	11%
Computer and equipment	10%
Home electronics and cameras	9%
Food	4%
Games	3%

Three out of five of the 55 to 74 year-olds downloaded information from governmental authorities during 2017. 40 percent downloaded forms, and 55 percent sent in forms that they had filled in (SCB, 2018).

Half of the 65 to 74-year-olds stated that they would use card payments and 13 percent that they will use apps for smartphones in the next ten years. 10 percent of males and 14 percent of females do not use a traditional physical wallet today and 17 percent (males) and 21 percent (females) believe that they will not use one in five years from now (Insight Intelligence, 2017).

One in four of the 61 to 75 year-olds cannot even imagine abandoning their landline phone for the use of only cellphones / smartphones (Intermetra, 2017).

Media use among 65 to 79 year-olds is concentrated to television (82%), radio (75%), and daily newspapers (80%). When it comes to digital platforms, the most common are social media (33%), traditional media in digital versions (32%), and daily newspapers in digital versions (24%)(Nordicom, 2018).

3.3. Information systems

Information systems (henceforth IS) constitute a base for enabling communication and interaction with and through digital devices such as smartphones, tablets and computers (e.g. figure 10, 11, and 12 described in 3.1). Hence, this section will highlight different aspects of IS.

Turban, Pollard, and Wood (2018, p. 28) state that "Information systems (ISs) is a combination of information technology and people's activities using the technology to support business processes, operations, management, and decision making at different levels of the organization". They explain that ISs begin with input where data is collected. The data will be processed and generate an output where the result is provided. Finally, the data can be stored for later use and feedback. The components in an IS consists of six interacting parts: i) hardware, ii) software, iii) people, iv) procedures, v) network, and vi) data. Hardware are physical devices such as processor, modem, and smartphone. Examples of software are operating systems (OS), Internet browser, Microsoft Office, and Google Chrome. People are individuals who work with or use an IS. Procedures are documentation covering directions such as operational manual or user manual. Networks are computers interacting with other computers in order to exchange data on for example the World Wide Web.

The World Wide Web (WWW) was launched in 1991 and invented by Tim Berners-Lee (Turban et al., 2018). It contains web pages that can be seen as a network of documents on the Internet, built with HTML, hypertext mark-up language (World Wide Web Consortium, 2018). It has developed from a rather modest and static way for a few people to

communicate, to a refined communication tool used worldwide by billions. Today the Web constitutes a platform for service and social interaction (McAfee & Brynjolfsson, 2017). Flodén (2013) claims that it is important to make a distinction between the principal network and services on the network. Services offered on the Web, make it possible to do shopping, be entertained, entertain, and be involved in education, research, business and much more.

The Internet consists of many connected networks. This in turn means that there is no real owner of the Internet (Flodén, 2013). However, there are independent non-profit organisations who govern the Internet and, for example set standards and allocate domains. In addition, the Internet of Things (IoT) is a worldwide network of physical objects, 'things'. These things are embedded with software, sensors and connectivity to enable the transfer of value-added data with for example manufacturers, operators or other devices (Peppard & Ward, 2016). Within the IoT, each embedded thing can be identified by a unique number. These "smart" things can be found in a wide range of different devices such as pacemakers, cars, and security systems. The main driver of this development is the expansive adoption and deployment of sensors and smart devices (Turban et al., 2018). In turn, this development enhances the use of smartphones, tablets, computers, and apps. The Internet can be seen as a technological backbone as it is where the digital communication takes place and thereby forms an important part of the infrastructure for DWSs and digital servicescapes.

A smartphone is a personal computer with a mobile operating system used for communication by voice, text and Internet. In comparison to tablets and computers, stationary or laptop, it can be handheld and fits in a pocket. A smartphone differs from a mobile phone by being connected to the Internet and offering the use of software components called apps (Martin, 2015; Peppard & Ward, 2016). Apps are often installed by the manufacturer of the smartphone such as iPhone, BlackBerry, Samsung, and Sony. The user of the smartphone can also download apps from app providers such as Apple App Store, Google Play, Windows Phone Store, and Blackberry App World. Martin (2015, p. 26) describes apps as "Typically downloaded to a smartphone from an app store to enable the phone user to more easily accomplish a task. The task can range from checking the weather to comparing products and services". In addition, he states that apps are used as an important tool for branding, building customer relations and strengthening customer loyalty. Apps depend on application program interface (API) which is defined as an interface where two separate systems meet to enable both to communicate and interact (Turban et al., 2018). Digital devices like smartphones play an important part in the infrastructure to provide DWSs and digital servicescapes.

With the introduction and development of computers, tablets and smartphones combined with connected apps, a need for seamless use arose. This need is met by cloud services where the devices interact with

apps (e.g. providing and handling information), platforms (e.g. database), and infrastructure (e.g. network) (Peppard & Ward, 2016). The cloud can perform as a private cloud, used within the organisation, or a public cloud, operated by a third party, where multiple organisations have access. Cloud services can be seen as a part of the infrastructure and thereby play an important role for providing DWSs. For organisations in need of a high level of security, the private cloud is regarded as a more secure alternative. According to Turban et al. (2018, p. 17) a cloud service "is any computing resource that is provided over the Internet on demand". In addition, they claim that cloud services, mobility, digitalisation and Internet of Things will radically change the prerequisites for many companies on the market. Cokins (2017, p. 17) argues that "Organizations must either *disrupt* or *be disrupted*. Companies often fail to recognize disruptive threats until it's too late; even if they do, they often fail to act boldly and quickly enough. Embracing *digital transformation* is their recourse for protection". It is therefore necessary for companies to be innovative and relevant to the customers in order to remain competitive. According to Turban et al. (2018) there are four important factors to consider when selecting mobile network solutions: i) simple, ii) connected, iii) intelligent, and iv) trusted. The first to consider is that it is simple, meaning it must be easy to use, manage and deploy. The second to consider is connected, meaning that it provides the best connection possible. The third, intelligent, means that it is easily compatible with other systems. Finally, trusted means that the communication is secure and reliable. All four factors are important to consider because together they constitute a whole where no weak link may occur. However, providing digital platforms and digital services creates the need for support. One part of providing support is to run and maintain the digital services provided on the websites. A second part is to support the users of the websites and at the same time, the support can provide valuable insights that can be useful in the further development of digital platforms and digital services. According to Maisel (2014), it is important to benefit from the data provided from users and integrate it in the work within the organisation to improve the outcome of the business. In addition, it is important that the developers and providers not only provide something to wear but also focus on aspects of health and well-being (Kari, Koivunen, Frank, Makkonen, & Moilanen, 2017). The authors (Kari et al., 2017, p. 365) argue that "As our results show, the users want clear, relevant, and easy-to-understand information, so providing this could also advance the goal-oriented use of self-tracking technologies and subsequently increase perceived well-being". Kari, Koivunen, Frank, Makkonen, and Moilanen (2016, p. 13) argue that the technology must meet the individual needs and goals where the user is in focus and therefore a shift towards a view from "*quantified self* to *qualified self*" is necessary. In conclusion, an efficient IS, without weak links, forms the basis

for a successful digital relation between the developers, providers and young elderly.

3.3.1. Background IS/IT

IS and IT have a crucial role to play in providing services to groups like the young elderly. However, the idea of systemising information and using technology is not a new phenomenon. Kurzweil (1992) describes that people since ancient times have used different tools to communicate. Lunell (2011) claims that the use of technology is unique for human beings and although some animals use tools this cannot be compared to human practice. He defines technology as all the physical objects that humans use as means or methods to satisfy their needs or desires. Cöster and Westelius (2016) describe that people have used different technologies to handle information as long as there have been civilisations.

Over recent years IS has developed from handling and processing data to becoming a natural part of the everyday life of people and organisations. Langefors (1973, p. 195) defines IS as "A system of information sets needed for decision and signalling in a larger system (of which it is a subsystem) containing subsystems for collecting, storing processing, and distributing information sets". Turban, Volonino, and Wood (2015) describe IS as a system that is able to collect, process, analyse, and disseminate information to fit in a specific purpose. This also incorporates people, procedures and physical facilities, and operates in a certain environment. O'Brien and Marakas (2011) claim that it is a system that enables access to data, instructions, reports, and calculations. From the perspective of a company, an IS is an organisational and administrative solution to meet the challenges the decision makers need to face in order to solve the demands and problems they have to deal with (Laudon & Laudon, 2015). Examples of IS are CRM (Customer Relationship Management), ERP (Enterprise Resource Planning), and decision support systems.

Langefors (1973, p. 265) discusses some problems when designing IS and the complexity of processes where every process in itself is complicated, and he states that "Each program is in its turn a system of interconnected subprograms, many of which should be possible to be used for different processes". According to Krippendorff (2006) the interaction between interfaces can be described as human actions which create a reaction by artefacts. He (2006, p. 82) claims that "Humans do not act on what an artefact physically is or displays but on how they sense it, what it means to them, and what they wish to accomplish". This means that artefacts could be seen as tools to provide offerings to people and that they must generate some value for them, as there otherwise will be a risk that they reject what is offered.

McLuhan and Nevitt (1972, p. 87) discuss information and claim that "'Software' is not just data but the organization of information". O'Brien

and Marakas (2011, p. 38) define that "An information system (IS) can be any organized combination of people, hardware, software, communications networks, data resources, and policies and procedures that stores, retrieves, transforms, and disseminates information in an organization". Cöster and Westelius (2016) state that an infological foundation is the difference between data and information. Data, on the one hand, includes what we with the help of symbols can tell, write, store, process, and present in computers. Information, on the other hand, deals with the interpretation of the data. This implies that the interpretation is central, as it constitutes the transition between data and information. The transition can be facilitated and enriched by the help of metadata (e.g. by a description of how data elements should be interpreted). However, it can never be completely certain that the data can be interpreted as the specific information intended.

In the 1980s and 1990s the development of microcomputers took off which opened the way for telecommunications networks and a "phenomenon of end-user computing" (O'Brien & Marakas, 2011, p. 44). This provided the end-users with the power to be a resource and thereby support the corporate information services. An important development step during this era was dawn of artificial intelligence (AI) technology. During the 1990s and 2000s e-business and e-commerce systems were developed and enabled online commerce, including both extranet and intranet. With the development of the Internet, It became possible to provide people, the young elderly, with digital services such as DWSs, and that in turn created a need for an understanding of the ecosystem where developers, providers, Internet, apps, digital devices, digital servicescapes, and of course users play a major role. Hence, the concept of ecosystem will be highlighted next.

3.3.2. Ecosystem

The term ecosystem has developed from ecology to concepts dealing with affiliation and structure and can be defined as "the alignment structure of the multilateral set of partners that need to interact in order to focal value propositions to materialize"(Adner, 2017, p. 40). Ecosystems as affiliation are seen as groups of associated actors working within networks. Ecosystems as structure disclose activities for independent value propositions. Romero and Vernadat (2016) discuss in line with EIS the digital ecosystem of enterprises and argue that it often contains many ISs, sometimes more than hundreds. A digital ecosystem can be seen as a digital counterpart of biological ecosystems (Briscoe & De Wilde, 2009). They claim that the term digital ecosystem has been used to define several concepts. León et al. (2016, p. 1) argue that a model for digital ecosystem for healthcare and wellness should be considered to include "economic, technological, and legal asymmetries, which are present on e-services

beyond geographical regions". Briscoe and De Wilde (2009) describe digital ecosystems as software systems that are robust, scalable, and self-organising in order to meet users' demand for apps. In addition, the development of digital devices (e.g. smartphones and tablets), Internet of Things, and Cloud Computing can be highlighted. According to Cöster and Westelius (2016); Peppard and Ward (2016) the development of smartphones and cloud computing has contributed to "the Internet of Things" which means that more and more objects are connected to the Internet. To some extent, this is about people wanting to communicate, control and review things at a distance and to some extent companies and organisations that has a wish or demand for feedback from devices in the hands of others (e.g. customers and end users).

An ecosystem consists of "policies, strategies, processes, information, technologies, applications and stakeholders" and furthermore includes people who "create, sell, regulate, manage and use" the system (Open ePolicy Group, 2005, p. 3). According to Canares (2016, p. 124), an ICT ecosystem for e-taxation (figure 20) contains context, technology, stakeholders, and use and result. In order to understand an ecosystem, it is important to have a holistic approach, take into account all parts and how they interact with each other.

Figure 20. An ecosystem approach at assessing e-taxation (Canares, 2016, p. 124)

This section has provided views on IS and digitalisation. For the young elderly digitalisation has been a part of their lives and during its development it has provided them with new opportunities to communicate. To them the interface on their digital device is where the

interaction with the digital wellness provider occurs. However, behind the interface, a digital servicescape within the framework of an ecosystem provides the necessary tools for the young elderly to achieve the wellness they seek. Hence, research on user interface will be highlighted next.

3.3.3. User interface

The user interface is what most users probably think of when using digital devices (see figures 10 to 19 in section 3.1). It is for the user of digital devices the most obvious and visible part of the work performed and it is in the interface the user acts by using icons, buttons, boxes, windows and pictures (Flodén, 2013). Lunell (2011, p. 321) claims that the first user interfaces were developed with a "technician's system vision" and the common view until the 1970s was that in order to use a system the user must think like a developer. Martin (2017, p. 169) claims that "Your experience is dominated by the interface: the screen, the mouse, the buttons, and the sound". In addition, he stresses that it is easy to forget what is happening behind the interface where data structures and functions are working in order to perform what is to be found on the interface. An interface can be seen as the stage where the performance occurs and is experienced by the user. However, without the backstage work, nothing would be revealed on the interface. It is in the interface, which is the outermost layer, where the interaction between the user and provider occurs (Lunell, 2011). Furthermore, he states that this resulted in the invention of WIMP, which stands for: windows, icons, menus, and pointer. Windows to present a certain content, icons to represent the content, menus to present what can be performed in a certain program in a specific situation, and pointer to point out the place in focus, to open, close, move, and make windows larger or smaller. The WIMP design is, according to the author, still used today and still dominates the user interface.

Hsiao, Lee, Yang, and Chen (2017) stress that the user interface has become increasingly important as it creates both opportunities and challenges when it comes to senior users because they can have problems in understanding and operating digital devices. In addition, Yusof, Romli, and Yusof (2014, p. 28) state that "The mobile phone design currently is always lack of concern towards the usability of the elderly". They argue that elderly people have difficulties understanding and handling mobile phones and therefore it is important for providers and developers to understand their capabilities. Elderly people face a slow deterioration of perception, movement and recognition that has an impact on their daily lives (Okada, 1997). According to Williams, Alam, Ahamed, and Chu (2013) older users may have problems with operating devices since they may have cognitive, auditory, visual, haptic, and motion difficulties. Finstad (2010) stresses the interaction between humans and computers and states that

the design of the usability of the user interface has to be suited to the target group. In addition, consumer behaviour has to be evaluated to develop and provide an interface that meets the demands and expectations of the target group. Williams et al. (2013) state that a well-designed and efficient interface must take into account the ability of, for example, elderly users so it meets their demands for usability. Since the beginning of the development of user interfaces a lot has been done but according to Hsiao et al. (2017, p. 158) "The user interface is constantly making progress and is ubiquitous nowadays, however its design currently is still lack of concern towards the usability and accessibility of the elderly". They claim that it is important that the user interfaces for elderly are designed in an intuitive way with a natural interaction interface embedded in order to provide a high level of usability. In addition, Dupuy, Consel, and Sauzeon (2016) suggest that well-designed interfaces for older users must provide more self-determination possibilities. In line with this, Yusof et al. (2014, p. 30) propose that more effort is put into designing technology for elderly and then take into account: i) visual design, e.g. bigger text, ii) cognitive design, e.g. fewer functions, iii) dexterity design, e.g. bigger keypad and buttons, and iv) audio design, e.g. loud ringtones.

What has been proposed for user interfaces for people in general, and for older people in particular, points toward a discussion about servicescape and digital servicescape. In this section, aspects of IS related to DWSs in digital servicescapes have been highlighted. Knowledge essential to build efficient IS with digital servicescapes has been in focus and will be presented in next section.

3.4. Digital servicescape background

Booms and Bitner (1982) and Bitner (1992) stress the physical surroundings in service organisations and introduced the concept of servicescape. The concept of servicescape can be seen as a place where services are created and occur in an environment or a physical setting (De Keyser & Lariviere, 2014). Bitner (1992, p. 58) argues that there are three types of service organisations where the difference lies in who it is in the servicescape that carries out the action. The first she describes as self-service where only the customer is in action (e.g. cash machine/ATM). The second deals with interpersonal services where both employee and customer are involved (e.g. health clinic and restaurants), and finally the third is about remote service where only the employee is in action (e.g. fully automated voice messaging machines).

According to Bitner (1992, p. 60) different environmental dimensions are included in a servicescape: ambient conditions, space/function, and signs, symbols and artefacts. These dimensions are what a customer perceives in a servicescape and what creates the holistic environmental

picture to them. Later, Bitner (2000) developed the servicescape dimensions in two parts: social environment and built environment, the latter containing: i) ambience, ii) function, and iii) design. Hopkins et al. (2009) state that all three are influential in what a customer will perceive in a servicescape and therefore crucial to every service provided. Keen and Mackintosh (2001, p. 38) claim that in commerce it is important to meet the customer "when, where, and how they want". Therefore, it is important to shape/create a place that meets the demands and expectations of the customer. The authors explain that the option of placing offerings on the internet enables a sense of freedom to the customer. Although it does not necessarily mean more offers to choose between, it offers the customer the choice of when, where and how they want to take advantage of the options. Over time the customers will choose a fruitful relation where the delivery and the communication is in line with what they expect (Vandermerwe, 2001).

While communicating to customers online it is of importance to have a clear presence on the web. However just presence is not enough and therefore companies need to offer good quality of service as well as giving customers the sense that the service is tailored for them (Teo & Swan Tan, 2002; Zeithaml, 2002; Zeithaml, Bitner, & Gremler, 2013; Zeithaml, Parasuraman, & Malhotra, 2002). According to Teo and Swan Tan (2002) services must be personalised, otherwise they will not attract customers.

Harris and Goode (2010, p. 231) define e-servicescape "as the online environment factors that exist during service delivery". Hopkins et al. (2009) argue that the e-servicescape is an internet site where customers interact with a company. The interaction includes the company's design and features. Harris and Goode (2010, p. 239) discuss different terms regarding offers provided on the Internet. They mention e-servicescape, online servicescape and online environment however, they state "Nevertheless, we are favourably biased toward the term "e-servicescape", since the label emphasises the context of online exchange and highlights that purchasing online involves element of self-service, even when products are purchased".

Ezeh and Harris (2007) claim that the design of service and servicescape are important factors to customers, as well as service organisations since the service is performed in a servicescape where the interaction between the customer and the provider occurs. Harris and Ezeh (2008, p. 393) propose a conceptual model of servicescape (figure 21) where they point out the four variables, ambient conditions, design factors, staff behaviour, and staff image, as essential in a servicescape. The four variables together with personal factors and environmental factors influence and form the loyalty intentions of the customer.

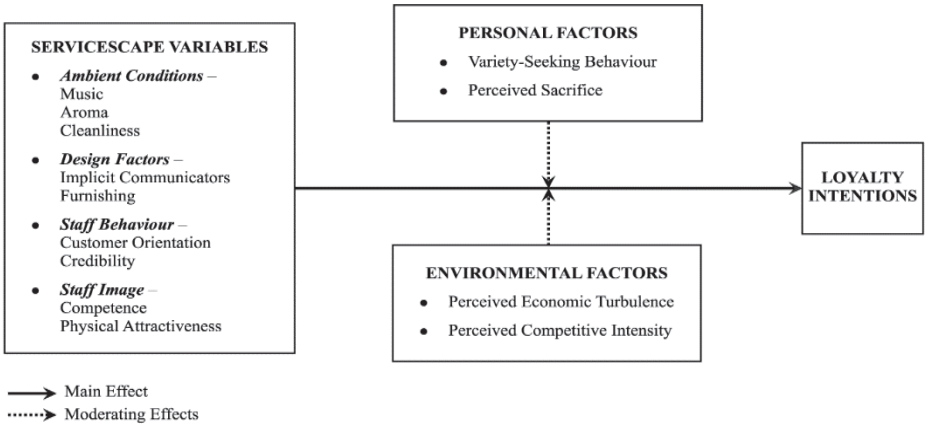


Figure 21. A conceptual model of servicescape (Harris & Ezeh, 2008, p. 393)

In addition to the discussion on servicescape and digital servicescape it must be highlighted what Helmefalk (2017); Hultén (2009); Krishna (2010) argue within sensory marketing. They present people's five senses: haptics, olfaction, audition, vision, and taste, as important factors for marketers in their market communication. The authors argue that it is important to consider all five in order to succeed in creating an efficient service environment. In line with this Raz et al. (2008, p. 726) propose multi-sensory design where different aspects of the senses are dealt with in order to "calculate the optimum value of each variable".

In this section, aspects of digital servicescape related to DWSs have been highlighted. Knowledge essential for building efficient digital servicescapes has been in focus.

3.5. Summary

In this thesis, the aim is to justify and work out arguments that wellness can be formed and maintained with digital services, called DWSs, offered and provided to young elderly in digital servicescapes. So far, the thesis has built a basic understanding of the problem area, presented and summarised the results of six studies and the methodology and data collection techniques used in the studies. In this chapter, other researchers' contributions have been highlighted. These all contribute to answering the research question: *How can a digital servicescape enhance young elderly's use of Digital Wellness Services (DWSs)?* In this chapter, the DWSs, young elderly as users, information systems, and the background to digital servicescapes have been described as a basis for future work on building the platforms for DWSs and digital servicescape. In order to develop knowledge, it is important to benefit from relevant research in the field.

DWSs are provided in digital servicescapes. It is in the digital servicescape that the young elderly can benefit from what DWSs offer. The young elderly are, as a group, a very large market consisting of almost 100 million people in Europe alone. However, to understand the target group it is important to consider the four wellness dimensions: physical wellness, social wellness, emotional wellness, and intellectual wellness. Together, the four dimensions form a holistic approach to understanding what is of importance regarding young elderly's wellness in order to motivate them to benefit from DWSs. DWSs are provided in digital servicescapes on digital devices such as Fitbit and Apple. They can help young elderly with information that has an impact on their wellness, e.g. pulse, nutrition, and training guidance.

The young elderly belong to a group who were born long before the Internet emerged and this may affect their motivation and willingness to benefit from DWSs. Motivation that affects the young elderly can be both intrinsic and extrinsic and therefore has to be considered when developing and providing DWSs and digital servicescapes aimed at this target group.

IS constitutes the base for facilitating communication and interaction through digital devices. Over the years, IS has developed from being a tool for handling and processing data to becoming a natural part of people's everyday lives. The user and provider of an IS meet in the interface and it is here the two counterparts in the digital ecosystem interact. It is in the interface that the moment of truth occurs as it is here the DWS within the digital servicescape will be rejected or accepted by the young elderly. The concept of digital servicescape originates from the concept of servicescape. A servicescape can be defined as the place where services come about in a physical setting. Therefore, in turn the digital servicescape can be regarded as the place where digital services come about in a digital setting. DWSs are provided in the digital servicescape which in turn forms a part within and in relation to a servicescape. For developers and providers of digital servicescapes and DWSs it is important to consider what sensory factors are possible and plausible when communicating with a target group such as the young elderly.

The summary of this chapter has highlighted important aspects of what to consider when developing and providing DWSs within a digital servicescape aimed at young elderly.

In the next chapter, findings and conclusions from the work on this thesis are presented.

4. Findings and discussion

"Working in the coal mine"
- Lee Dorsey -

Proactive wellness programs for young elderly will have cumulative effects on the prospects for good health among seniors. DWSs for large groups of young elderly will require an ecosystem of actors to develop, distribute, maintain, support, and further develop the services. A servicescape offers the conceptual basis for the ecosystem to form, evolve, and survive. Servicescapes will offer platforms on which it is easy, effective, and productive to access and use DWSs the process of developing, improving and sustaining the use of DWSs for improved health leads to the research question: How can a digital servicescape enhance young elderly's use of Digital Wellness Services (DWSs)?, that will be answered at the end of this thesis. In chapter 3, DWSs, young elderly as users, information systems, and digital servicescapes form a basis for this chapter where the findings are highlighted.

In this chapter, the findings from the five original research papers will be evaluated to contrast and gain insight into how the theory matches the empirical results collected. It represents what the work of 'digging' into the field indicated and is discussed with the aim of answering the purpose and research goal of the thesis.

4.1. Servicescape for digital wellness services

The young elderly's use of DWSs can be enhanced by efficient servicescapes, specially designed so that they can benefit from DWSs. McFedries (2013) claims technology use has become more and more popular. However, according to Carlsson and Walden (2017a), DWSs are mostly developed and designed for younger people and people in employment. The authors' statement points to a potential market where several stakeholders can benefit from developing and providing DWSs in servicescapes tailored for the requirements of the young elderly. This will be further discussed in this chapter.

The DWSs are provided for the young elderly to access in physical or digital servicescapes (figure 22). However, this issue is not within the scope of the thesis but as it contains a servicescape where DWS is a part, it is important to make this distinction.

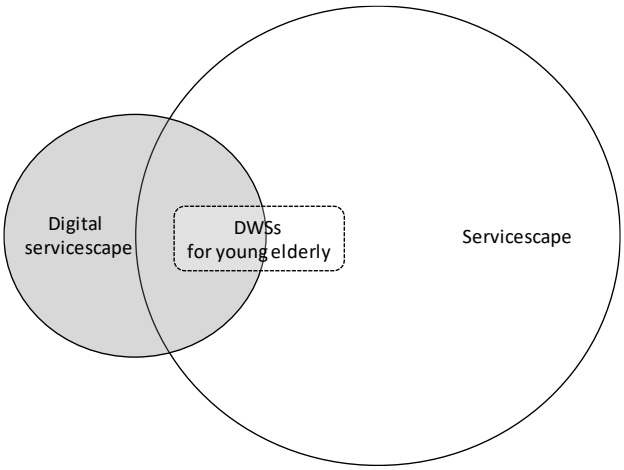


Figure 22. Servicescape for obtaining DWS

Servicescapes for DWS, which is the scope of the thesis, is a part of DWSs (figure 23). The servicescape is placed at the edge of DWS as it is the entry point to enable the young elderly to benefit from extended services that the provider offers in the servicescape.

Figure 23. Servicescape for DWS

Servicescapes are often seen as a physical servicescape. In a physical servicescape (e.g. stores, see figure 22), it is possible to use the human senses of visual, auditory, olfactory, haptic, and gustatory cues to communicate (Helmefalk, 2017; Hultén, 2009; Krishna, 2010). However, in a digital servicescape (figure 22 and 23), olfactory, haptic, and gustatory cues are limited but still possible to use when communicating with customers such as the young elderly (P3). In addition, this is of importance when designing DWSs and servicescapes for DWSs. In a DWS, it is possible to give the young elderly the impression of a walk in the forest. However, it is not possible to provide the actual smell of the forest, but just an

impression of the feeling. Nonetheless, this is an important factor to keep in mind for successfully designing DWSs and servicescape for DWSs.

The *servicescape for DWS context model*, presented in P5 (named DiWeSS), consists of developer, provider, and young elderly, who meet and interact in a digital servicescape (figure 24). It should be noted that Figure 22 corresponds to the second square in the context model (figure 24) and that Figure 23 constitutes the third square.

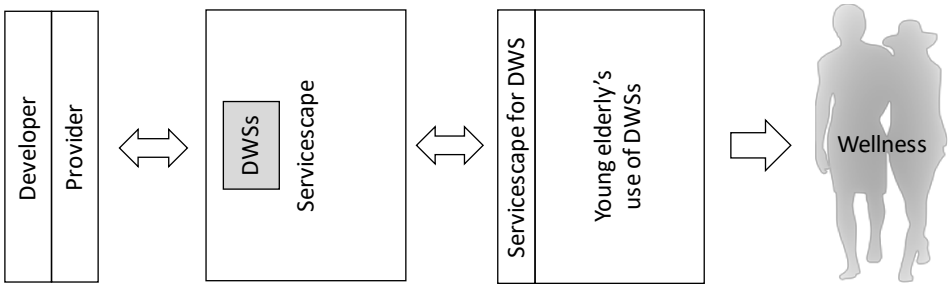


Figure 24. Servicescape for DWS context model (Allmér, 2018, p. 8)

The young elderly use the servicescape where DWSs are provided to achieve wellness, i.e. "to be in sufficiently good shape of mind and body to be successful with all everyday requirements" (Carlsson & Walden, 2017a, p. 3). The servicescape has to be a natural part of the young elderly's everyday life and therefore has to be designed in line with the requirements of the target group, as they will otherwise reject what is offered. Therefore, the servicescape has to constitute an organised system including people, hardware, software, communications networks, data, resources, and policies and procedures that stores, retrieves, transforms, and disseminates information in line with what has been proposed by e.g. Cokins (2017); Keen (1991); Langefors (1973); Laudon and Laudon (2015); McLuhan and Nevitt (1972); O'Brien and Marakas (2011); Turban et al. (2015). The most important elements are the customer (e.g. young elderly), developers, providers, relatives, and society. However, the foundation to gain people's attention, trust and loyalty is to provide services that meet their interests and requirements, as they will otherwise not be motivated to accept the offer. In addition, it can be highlighted that the timeframe is of interest since technological changes can cause people to experience stress. Blackburn et al. (1996) claim that speed and time are important when developing software and Virilio (1986, 2007, 2010a, 2010b) states that speed nowadays is not an option, but is a must. Based on what Virilio states, Hauer (2017) argues that the interactivity of today can turn into a single mass media corpus which on the one hand can open for co-creation but on the other hand can push people towards stress. The pressure on developers and providers of DWSs could affect the young

elderly's chances of being part of the co-creation process as co-creation takes time to enable. However, according to research conducted by Hackman and Oldham (1975, 1976, 1980); Oldham and Hackman (2010) it can be beneficial to enable co-operation as the process can add motivation, satisfaction, and productivity into the work. To this discussion de Vries, Peluso, Romani, Leeflang, and Marcati (2017); Pink (2010, 2012a, 2012b); Prentice, Halusic, and Sheldon (2014); Ryan and Deci (2000a, 2000b); Sheldon, Abad, and Hinsch (2011) add that money and rewards are not the driving forces for satisfaction. Instead they argue for letting people set their own goals, express themselves, and to motivate them to co-operate and co-create.

In P5, a DiWeSS program was presented which states the young elderly's needs and requirements, and their demands on the developers and providers. The program has been renamed a *Program for servicescape for DWSs* (figure 25).

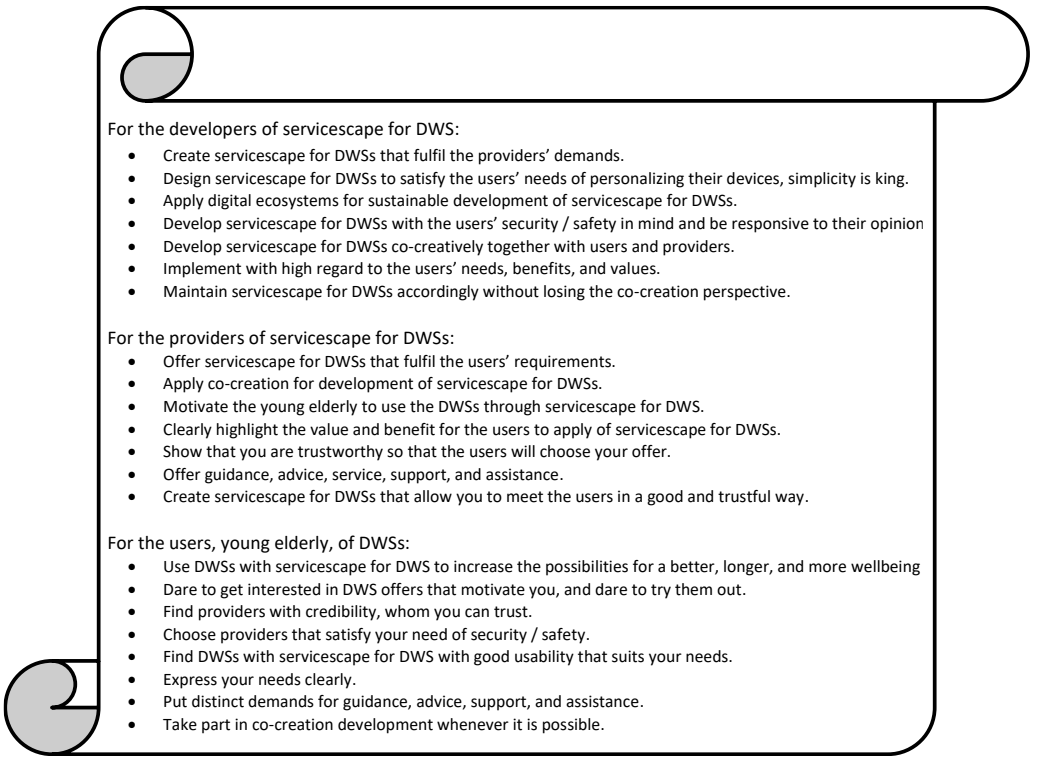


Figure 25. Program for servicescape for DWSs (Allmér, 2018, p. 10)

The needs and requirements are motivation, trust, credibility, usability, and guidance, which exist in the contexts. The demands concern motivation, trustworthiness, good usability, provision of guidance and co-creation development. For the two stakeholders, developers and providers, it is necessary to meet the young elderly's requirements so that

the offer cannot be rejected and for the young elderly a well-working DWS and servicescape for DWSs can enhance their chances of achieving wellness.

To sum up section 4.1, Servicescape for young elderly:

- DWSs are mostly developed and designed for younger people and people in employment.
- Young elderly's chances of benefitting from DWSs can be enhanced by well-working servicescapes.
- Young elderly need to be motivated to benefit from DWSs.
- Young elderly's requirements are trust, credibility, usability, and guidance.
- Co-creation constitutes an opportunity to involve the young elderly and thereby further develop DWSs and servicescapes for DWSs.
- The three main stakeholders are young elderly, developers, and providers.

As the last bullet point indicates, there are three main stakeholders, who will be discussed next.

4.2. Stakeholders - young elderly, providers, and developers

In this thesis, young elderly, providers, and developers are the three main stakeholders. To some extent, family, friends, and society can be regarded as stakeholders as they can benefit from well-working DWSs. This can be achieved by the young elderly becoming healthier and happier and thus reducing the need for support from relatives and friends. In addition, it can reduce healthcare costs for society (Carlsson & Walden, 2017b, 2018; Walden & Sell, 2017).

The group of young elderly consists of more than 1.7 million people in Sweden (SCB, 2018) and in Finland it is estimated that by 2020, 22.6 percent of the population will belong to the group (Statistics Finland, 2017). Six out of ten over the age of 75 years use Internet (IIS, 2017; Intermetra, 2017). In Sweden, the Swedish government is carefully following the digitalisation process and is working on IT-related issues (Regeringen, 2018). According to Eurostat (2017), the young elderly group will be about 100 million people in the European Union by 2020 and this will put considerable pressure on the economy (SALAR [Swedish SKL], 2018). This generates challenges for both society and individuals, and digital solutions such as DWSs can have an important impact and thereby constitute an important factor in solving the problem. In turn, this creates opportunities for young elderly, developers, providers, as well as family, friends, and society to benefit from what DWSs can offer. Hence, the

importance of beneficial DWSs and servicescape for DWSs for all stakeholders.

The young elderly consists of people born long before digitalisation became a ubiquitous part of people's everyday lives. However, when discussing people's use of digital services, it must be highlighted that there are differences between various age groups. O'Donnell (1985) argues that individuals born at more or less the same time should be considered to belong to the same generation. In addition, Parment (2011) argues that it is important to consider generational belonging, but also to consider factors such as culture, geographical location, and political interest. Martin (2017) claims that people's experience of digital service is dominated by the interface, where the screen, the keys, and sound play a major role. The young elderly were born and grew up in a time with a different culture from the present, including for example, knowledge, belief, morals, and habits (Bakka et al., 2014; Christensen & Suokannas, 2010; Hutnyk, 2006). In addition, the young elderly have in various ways participated in the introduction and development of digitalisation. The Internet and digital devices have over the years become increasingly important and influenced the young elderly in their private and professional life (World Wide Web Consortium, 2018). The young elderly have been, willingly or unwillingly, part of this development and may have met and still meet user interfaces and digital servicescapes that they are expected to adapt to by using icons, keys, boxes, windows, and pictures (Flodén, 2013; Lunell, 2011; McAfee & Brynjolfsson, 2017; Peppard & Ward, 2016; Turban et al., 2018). In addition, it must be emphasised that P1, P2, P4, and P5 show that the young elderly utilise and benefit from what is offered in digital servicescapes. However, they express that digital servicescapes have to be designed in accordance to their needs, requirements, and wants. Otherwise, they will be reluctant and may even reject the offer.

An important issue for developers and providers when offering DWSs aimed at the group of young elderly is to understand the concept of wellness (Adams et al., 1997; Annear et al., 2014; Cooke et al., 2016; Dunn, 1959; Roscoe, 2009). In this framework, it can be wise to consider the four wellness dimensions. Thus, physical, social, intellectual, and emotional wellness dimensions together constitute a holistic picture of what is vital to people's wellness and in this case the young elderly's wellness (Crose et al., 1992; Durlak, 2000; Hettler, 1980; Renger et al., 2000). DWSs provided in an appropriate servicescape for DWS can enable and encourage physical, social, intellectual and emotional activities, and offer feedback on what physical and intellectual training activities generated in terms of sleep, pulse, and heart rate (Crowley et al., 2016). Regarding social and emotional wellness dimensions DWSs can facilitate and inspire listening to music, enjoying a book, and interacting with other people and thereby support the potential for wellness (Gates et al., 2011; Vance, 2012). Altogether, the concept of the four wellness dimensions constitutes a foundation for

improving and increasing the potential for wellness among the young elderly (Carlsson & Walden, 2015, 2017a, 2017b, 2018) and can help to avoid functional impairments (Üstün & Kennedy, 2009). In addition, research conducted by, for example, Lee et al. (2018); Visser et al. (2018) show that a healthier lifestyle is beneficial to the individuals and according to McKinsey & Company (2016) digital solutions can significantly support the reduction of health care expenses.

The relation between young elderly can be described by their relatively low interest (P1) in making use of and sharing each other's knowledge in, for example, relationship counselling (do not make use of 39 out of 63 and do not share 36 out of 63) and employment service (do not make use of 44 out of 63 and do not share 36 out of 63). Social aggregation occurs between people and constitutes a part of their relations and affects their identity (Berger & Luckmann, 1991; Kozinets, 2010, 2015). Regarding the relationship between young elderly and service providers it is sometimes hard to choose not to make use of digital services such as bank services since the provider's pricing is much lower using the digital service and the physical bank offices have been shut down (P1 and P2). This experience and view is also put forward by Hsiao et al. (2017); Yusof et al. (2014) who emphasise that providers and developers must understand the limitations older people may have regarding perception, movement, and recognition. Okada (1997) states that these limitations in abilities can cause trouble for older people. Williams et al. (2013) argue that older users may have difficulties operating digital devices since they can face cognitive, auditory, visual, haptic, and motion problems. Finstad (2010) proposes that the user interface must be designed in such a way that it meets the expectations and demands of the target group. In order to handle the limitations it is of importance that the user interface provides options of self-determination (Dupuy et al., 2016) by taking visual design, cognitive design, dexterity design, and audio design into account (Yusof et al., 2014).

In a servicescape (P3 and P4), the young elderly and the service provider interact and it is here that the offer will be accepted or rejected. Regardless of whether it is a physical or digital servicescape, the design plays a role for accepting or rejecting the offer. In addition, factors such as motivation, expectancy, trust, credibility, brand, and word of mouth play significant roles when young elderly choose to accept or reject what is offered. In addition, the user interface plays an important role as a part of the digital servicescape as it is the basis for the interaction between provider and customer. In addition, it can be highlighted that there are differences between various age groups when it comes to their relation to the world of Internet (Svatosová, 2013). Here the perception of the professionalism, content, and physical presence on the website plays a major role (Mavlanova et al., 2015). This is in line with what the young elderly mean when they argue that they prefer websites where for instance the content is easy to understand, to navigate, and trustable (P4).

According to Bratton (2007); Hevner et al. (2004), be of interest when developing IS since interfaces often deal with new innovative artefacts offered in a digital servicescape. Regarding the development of DWSs, Gleasure and Grace (2016) claim, based on research conducted by Gregor and Hevner (2013); Hevner et al. (2004); March and Smith (1995), that artefacts are important when developing IT-enabled healthcare as mobile apps can assist in promoting wellness to people. For the young elderly, digital services offered in a digital servicescape can be seen as artefacts though they may regard it as technology that provides them with services. However, for younger people, to whom the Internet is as obvious as the radio was for the young elderly when they were young, Internet is something they may take for granted and therefore it can be regarded as an assumption. This is according to Hatch and Cunliffe (2013) in line with the model and they stress that the content of the three levels can change and move over time. Schein and Van Maanen (2016, p. 171) claim that "digitization and automation of everything" has changed the labour market as people today place greater value on individualism and individual rights compared when the young elderly entered the labour market. In addition, the young elderly are seen as digital immigrants compared to younger people who are regarded as digital natives (Furini, 2014; Hoffmann et al., 2014). It is also true that there are young elderly who are very interested in what digital services and devices can offer and therefore they can be seen as naturalised digitals (Hoffmann et al., 2014) or possibly even be seen as possessing digital wisdom (Bayne & Ross, 2007; Bennett & Maton, 2010; Judd, 2018; Prensky, 2009). In addition, there are people in all groups who seem dependent on their mobile devices (Ahn & Jung, 2014). According to Cockrell et al. (1998); Parment (2013), young people live on and through the Internet around the clock while older people use it when it adds values for them. This shows that, although there are differences between the groups, it may be advisable not to draw too many conclusions based only on age. Instead, it may be beneficial to weigh in several aspects such as needs and motivation. This is also something that is supported by what has emerged in P1, P2, P4, and P5. Probably one way to motivate the young elderly could be what Carlsson and Walden (2017a, p. 3) express with "it is nicer to get old if you are in good shape".

4.2.1. Using digital wellness services

The first three surveys (P 1) show that the respondents use different types of digital devices in order to make use of various apps, provided in digital servicescapes, such as banking, travel and news. Of the 63 respondents, 52 use a computer, 50 use a mobile phone, 16 use a smartphone and 6 use a tablet. The study was carried out in 2013 and probably the use of smartphones has increased and the use of older mobile phones has decreased over the years since then. When it comes to using the Internet,

34 use it on a daily basis and 9 never. Regarding apps, 48 use them for e-mail, 39 for activities in clubs and associations and 32 for news services. 22 out of 31 respondents (study 2) use online banking services. The results from the surveys (P1) are in accordance with what has been found in studies performed a few years later (Intermetra, 2017; Nordicom, 2018). The use of digital devices like smartphones and tablets is a practice that the young elderly have had to adapt to during their lifetime. Events and changes during people's lifetime play a part in their history and culture (Eisenstadt, 1956; Kertzer, 1983; Kuhn, 1997; Mannheim, 1952; O'Donnell, 1985) and this is something that distinguishes them from younger generations (Hofstede, 1994; Parment, 2008, 2011, 2013; Roberts, 2012). The results of the studies show what Olsson et al. (2017); Olsson and Viscovi (2016); Viscovi et al. (2017a, 2017b) have found when they claim that not all older people use digital devices and therefore do not take part in and do not share what is offered in the digital society. This in turn can affect their life and social behaviour which is of importance (Giddens, 1989) as well as their identity (Alvesson, 2013).

The respondents had low interest in making use of others' knowledge as well as sharing their own with others. In the case of genealogy 6 out of 63 showed much interest in making use of others' knowledge (P1). The low interest indicates that the intrinsic and extrinsic aspects of motivation discussed by for instance Flodén (2013); Jordan (1952); Ryan and Deci (2000a) are not met by sharing with others, at least not through digital services. According to Sansone and Harackiewicz (2000) there has to be a desire or a need to achieve a specific outcome and as otherwise little or no interest will be paid to the proposal. Although Eisenberger and Cameron (1996) discuss if intrinsic motivation could be a myth, it is important to motivate young elderly as they will otherwise not make use of other's knowledge or share knowledge with others. However, it is important to motivate the young elderly and offer rewards that mean something to them. According to Marklund (2017), the motivation to get fitter, live more healthily, and thereby live longer is a fundamental argument for wellness services. Herzberg et al. (1959); Katz (1964); Likert (1961) claim that the goals have to be to encourage people to enter and remain in the system by letting them play their role and allow them to co-operate with others and that could be a way for reward.

The thesis (P1 and P2) shows that the young elderly are using services that are offered in digital servicescapes since they, for example, make use of online banking services. Banking services have changed over recent years from being what Grönroos (2015) defines as high-touch services to becoming a more high-tech service as people, including the young elderly, nowadays handle their banking over the Internet instead of visiting a bank office. This creates a need for banks to handle resistance as well as building trust, credibility, guidance, and customisation as the service the bank clerk previously offered by building relations with the client is not available

today to the same extent. The importance of considering trust, credibility, and guidance is supported by the findings in P1, P2, P4, and P5. In addition, it is important to note that not all people, among them some of the young elderly, use the Internet and are reluctant to use services offered in digital servicescapes. Therefore, it is important for developers and providers to realise that people use their services to achieve something (Vargo & Lusch, 2008a, 2008b) and this indicates that the people are buying a benefit, regardless of whether they buy goods or services or a combination of both (Enis & Roering, 1981; Gummesson, 1995) and irrespective of whether the services are intangible and goods are tangible (Solomon et al., 2013).

In a physical servicescape, it is fully possible to communicate with vision, hearing, smell, touch, and taste. Regarding a digital servicescape (P3) it is fully possible to communicate with users on a digital device with video, audio and text. However, the young elderly are more cautious and careful before they adapt to digital services (Cockrell et al., 1998; Parment, 2014). This is also supported by the findings from P1, P2, P4, and P5. The concept of servicescape was introduced by Booms and Bitner (1981, 1982) and can be seen as the physical setting where services occur (De Keyser & Lariviere, 2014). When Booms and Bitner (1981, 1982) launched the concept, the Internet was unknown to most people and few could even imagine the digital world that awaited a little more than a decade later. The three environmental dimensions proposed by Bitner (1992) are essential in a servicescape as well as in a digital servicescape since they are related to each other and affect what the customer perceives and thereby creates a holistic environmental image of the provider and what is offered (Bitner, 2000). To the young elderly it is the holistic picture of the digital servicescape that will be crucial if are going to reject or adopt what is offered in the digital servicescape. This is in line with what is argued by, for example, Hopkins et al. (2009); Keen and Mackintosh (2001); Vandermerwe (2001), as well as in the findings of this thesis. In addition, it indicates the importance of showing that the services offered are aimed at and customised for the young elderly as highlighted by for example Teo and Swan Tan (2002); Zeithaml (2002); Zeithaml et al. (2013); Zeithaml et al. (2002). This in turn shows the importance of designing the digital servicescape in way that attracts the young elderly and makes them feel that it is designed for them. This is also something that emerges in P1, P2, P4, and P5. Here the factors proposed by Ezeh and Harris (2007); Harris and Ezeh (2008), namely servicescape variables, personal factors, and environmental factors, can play a major role when combined with the concept of sensory marketing (Helmefalk, 2017; Hultén, 2009; Krishna, 2010) including haptics, olfaction, audition, vision, and taste for profitable marketing communication. Therefore, it is important to take maximum advantage of what the sensory marketing variables offer when developing and providing digital servicescapes and DWSs and work according to what Raz et al. (2008) terms as multi-sensory design.

4.2.2. Stakeholders' values

Trust and credibility (P1) and trust, resistance, guidance and customisation (P2) were important factors for the respondents. Trust constitutes the base for accepting what is offered but a lack of trust leads to hesitation and resistance. Hence, it is important that the service provider is known by the user. Credibility means that the user is familiar with the provider and this is thereby related to trust. One aspect of resistance is wanting to know who is responsible for the app / IS. The user wants guidance to feel safe and secure when using apps. It is important that customisation meets their demands, either designed by the provider or by adapting the settings themselves. Häkkilä et al. (2015); Kari et al. (2016, 2017); Makkonen et al. (2012a, 2012b) have shown that digital devices such as wearables not only have to look good on the user's arm to be attractive, but also and more importantly that it subsequently increases their perceived well-being. When providers customise a service, co-creation is a possible solution to meet this requirement (Maisel, 2014). This is something that IS developers should consider but, according to Keen (1991); Keen and Mackintosh (2001), the IS profession is not renowned for being open to taking insights from human relations into account.

Potential young elderly users of DWSs state that expectancy, motivation, reward, and trust are the most important areas for them (P4 and P5). In addition, it can be argued that according to Carlsson and Walden (2018) the young elderly (Åland, Finland) are willing to pay close to EUR 20 per month for DWS. However, it could be an idea to offer a freemium membership to start with (Marketing News, 2012). Spotify, Storytel, and Weightwatchers are all examples showing that it is possible to charge for digital services and even DWSs. In addition, it must be highlighted that the Swedish Association for Senior Citizens provide wellness-related services on their homepage (SPF-Seniorerna, 2017). The young elderly expect some kind of effect or reward and this varies according to the type of digital service offered, for example, when helping a friend a thank you is sufficient reward and / or when non-financial it should include all involved. Motivation for the young elderly to get interested in using a DWS involves the satisfaction of helping someone. According to Kari and Rinne (2018) motivation is important and affects the behaviour of physically inactive people. Rewards can be of different types depending on what DWS is in focus such as when giving help to a someone in need the reward can be sharing a cup of coffee. Motivation forms the basis for people's activities and answers their desire to fulfil goals (Jordan, 1952; Maslow, 1943, 1973; Woodworth, 1947). However, motivation is not easy to determine and classify and, for instance, Maslow's ideas have met some criticism as there is little or no convincing research that fully confirms his work (Hunt & Hill, 1977; Neher, 1991; Wahba & Bridwell,

1976; Wofford, 1971). What Zimbardo and Gerrig (1996) claim about motivation in connection with expressing power, dominance, and aggression are worth consideration but are not supported by this thesis as it (P4) rather indicates that young elderly are motivated and want to support other people and that they do not expect or demand any reward more than a thank you or a small gratitude. The young elderly's thoughts on motivation and rewards can be linked to what Schachter and Singer (1962) argue, on the basis of the two factor theory (Herzberg, 1968; Herzberg et al., 1959), where they emphasise physiological arousal and cognitive circumstance as keys to create an emotion. Therefore, it is important to ensure that the young elderly are motivated and feel that they will be rewarded as they will otherwise tend to reject what is offered.

To sum up section 4.2, Stakeholders – young elderly, providers, and developers:

- In addition to the three main stakeholders, young elderly, developers and providers, there are also to some extent even family, friends and society.
- Young elderly constitute a large group of people.
- Young elderly consist of people born long before digitalisation started.
- The concept of wellness includes several dimensions.
- Both developers and providers must consider the demands and requirements of the young elderly.

As efficient DWSs are IS this will be discussed next.

4.3. Information systems

Since Internet started to be an important tool for communication and service provision it has also brought opportunities to marketers (Brynjolfsson, 1994; Brynjolfsson et al., 2011; Brynjolfsson & McAfee, 2014; Brynjolfsson & Saunders, 2009; Heinen, 1996) and some even forecasted a scenario of more or less the death of traditional market communication (Holbrook & Hulbert, 2002). With the development of digital servicescapes on the Internet, an expanded opportunity to do business arose, particularly in what is known as "the long tail" where less popular products found a market later on (Anderson, 2006, 2009, 2012; Brynjolfsson et al., 2011). However, as the group of people over the age of 65 years, according to Benka Wallén et al. (2014) constitute more than 2 million in Sweden alone and according to Carlsson and Walden (2017a); Eurostat (2017) 18-23 percent of the population in most EU countries, the potential of this market has to be taken seriously and not be regarded as a long tail. Hence, it is important that developers and providers of IS see the

market potential that the group of young elderly constitutes. In addition it must be kept in mind that the young elderly grew up in a physical world (Achrol & Kotler, 2012; Rheingold, 1993) but, according to the findings presented in this thesis, use the Internet and digital services such as online banking services (P1, P2, P4, and P5), which also is in line with what Parment (2014) found.

The digital ecosystem (figure 26, inspired by Canares, 2016) is central for providing servicescapes for DWSs (P5), since it is an IS and it can be seen as a counterpart of biological ecosystems (Briscoe & De Wilde, 2009; León et al., 2016). Young elderly, providers, and developers are stakeholders in servicescapes for DWSs (P5) and thereby parts and important factors in the ecosystem.

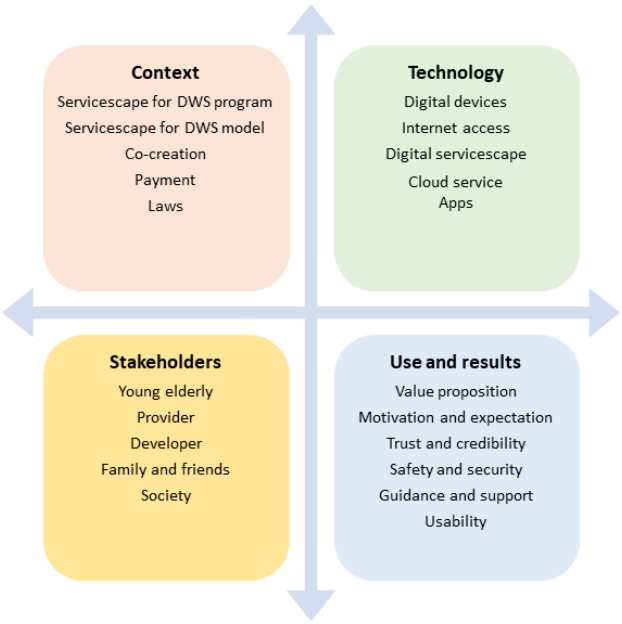


Figure 26. Examples of content in a DWS ecosystem

The purpose of the ecosystem must be to create value for the various stakeholders and especially for the users, as they will otherwise reject the offer. Therefore, a service offer within the ecosystem has to be based on a customer perspective as it is the customer, in this case the young elderly, who is supposed to benefit from the offered service in a physical, mental, or virtual manner (Gummesson, 1995; Vargo & Lusch, 2008a, 2008b). Young elderly are anxious about the risks connected to the use of apps on the Internet. They have little interest in sharing knowledge and need motivation to use apps. Therefore, they have demands on developers and providers of DWSs in terms of security, guidance, and usability that have to be taken into account when assembling an ecosystem aimed at young elderly who might otherwise reject the offer (P1, P2, P4, and P5). DWS

mirrored in the ecosystem framework approach stated by Canares (2016) shows the area's context, technology, stakeholders, use and results. However, an ecosystem contains much more than the four parts named in the framework and Romero and Vernadat (2016) claim that an ecosystem includes hundreds of ISs. In addition, the DWS ecosystem contains according to Open ePolicy Group (2005) policies, strategies, processes, information, technologies, apps, and stakeholders. Within the ecosystem, it must be possible to pay for what is offered and it must follow legal requirements such as the General Data Protection Regulation (GDPR), which came into force in the EU in spring 2018. Furthermore, an ecosystem includes people who create, sell, regulate, manage, and use the system, in line with what Canares (2016) proposes. The ecosystem, containing interrelated and interdependent elements can be related to what Cöster and Westelius (2016); Peppard and Ward (2016) term as 'the Internet of things'.

The digital ecosystem can be linked to the two service perspectives of Service Logic (SL) and Service Dominant Logic (SD-logic) proposed by Grönroos and Gummerus (2014). The core of these two concepts lies in the exchange of service and co-creation between and among stakeholders (Vargo & Lusch, 2004; Vargo et al., 2008). This can result in value co-creation where, according to Lusch and Vargo (2014); Vargo and Lusch (2016), symbols, norms, and other heuristics play an important role as they are interacted with and shared within the system. The ten managerial principles based on service logic for marketing (Grönroos & Gummerus, 2014, p. 207) highlight value co-creation within the ecosystem and the authors claim that "if a platform of co-creation exists or can be established through direct interaction among actors in the value generation process, the service provider can engage with customers' value creation, and opportunities for co-creation of value among actors arise". This statement pinpoints that values in a service environment, such as DWSs including their servicescape, are created with and for the target group. The ten principles, which originated in work of Grönroos (2011); Grönroos and Ravald (2011); Grönroos and Voima (2013), emphasise the importance of interaction for value generation and co-creation between the service providers and the customers. In addition, Grönroos and Gummerus (2014, p. 207) stress the role of stakeholders such as customers, "in their ecosystem, social value co-creational activities that influence the customers' independent value process may take place" and therefore the use of a platform designed for interactivity can contribute values for all parties by developing DWSs for the young elderly. This view of people consuming services within an ecosystem, as in the young elderly's use of DWSs, means that the term *prosumer* (Toffler, 1981) can be applied since the young elderly perform the roles of both co-creator and co-producer.

Within the scope of what is possible to include in an ecosystem it can be argued that the potential for customers to interact and co-create has

increased (Adner, 2017; Lenka et al., 2016). This interaction can be described as human interaction between people and artefacts which are created to induce a reaction (Krippendorff, 2006). This in turn creates opportunities for stakeholders such as developers, providers and young elderly to benefit from DWSs. However, if the service offered does not attract the customer within a few seconds, the risk is great that the offer will be rejected is great (Belch & Belch, 2017; Caesarius & Hohenthal, 2016; Evans et al., 2009; Knight et al., 2017). The short time a provider has available to capture people's attention and interest is influenced by the customers' cognitive reflection (Vujic, 2017) which in turn, according to Kennedy (2011), may lead people to take bad decisions. In order to capture people's attention, the service provider must see that the offer meets a need the customers have and can recognise (Armstrong et al., 2015; Baines & Fill, 2014; Kotler et al., 2011; Solomon et al., 2008). Even if the customer accepts the offer and buys the service, the purchase could create a cognitive dissonance that follows to what extent the customer is satisfied with the purchase. Regardless of to the extent to which the customers is satisfied with the purchase, it is very likely that they will communicate their experience with others through word of mouth (WoM) (Godson, 2009; Grönroos, 2015; Gummesson, 2008). Nowadays, since the advent of online communication by electronic word of mouth (eWoM), it is even more important for developers and providers to understand their customers as the customers' opinion can be spread over the world within a split second (Kietzmann & Canhoto, 2013; Szmigin & Piacentini, 2014). Therefore, it is vital that developers and providers meet the demands of the target group such as the one consisting of young elderly. In addition, this can be connected to (Harris & Ezeh, 2008; Harris & Goode, 2010) who argue that what could be beneficiary to people, are rejected, when digital services are perceived as being too complicated to manage. Hence, the importance of sufficiently efficient DWSs and servicescapes for DWSs tailored for young elderly.

The respondents in the different studies use digital devices and IS for various purposes (P1). The interaction between the user and provider occurs in a digital servicescape (P3). Hence, in the interface of a digital servicescape it is crucial to attract, build trust, provide guidance, work against resistance, and create credibility. The use of text, image, and sound ought to be adjusted to the demands of the users, in this case the young elderly, as they otherwise might reject what is offered. Human beings have since ancient times been communicating with help of different technologies (Cöster & Westelius, 2016; Kurzweil, 1992; Lunell, 2011). This means that communicating with the help of IT / IS adds another important and powerful tool for interaction between people opportunities for other stakeholders such as companies to do business and for authorities to inform (Capron & Johnson, 2011; Ward, 2012). In order to be successful when offering digital devices and the services embedded, the

resistance of people to adopt to new technology has to be taken into account and dealt with (Besson & Rowe, 2012). According to Rogers (2003), there are differences in people's willingness to adopt innovations and this also includes the group of young elderly. He (Rogers, 2003) claims that it is important that the innovation adds value for the target group as their motivation for adopting it will otherwise be low. In turn, it is also important to ensure that young elderly who adopt the offer become loyal and start climbing what Sugars (2006) defines as the ladder of loyalty. This is in line with P3 where it is argued that it is plausible to use all communication tools in a digital servicescape but taking into account what is possible in a digital servicescape environment. This has also to be taken into account in the strategic IS so it is tailored in a way that meets the demands, e.g. developing, planning, service, marketing, and sales, of all who have an interest in what is offered (Keen, 1991; Keen & Mackintosh, 2001; Peppard & Ward, 2016; Rashid, Hossain, & Patrick, 2002; Romero & Vernadat, 2016; Ward & Peppard, 2002).

The interaction between on the one hand the young elderly and on the other hand the developer and provider is where the clash occurs, and what is offered will be either accepted or rejected by the young elderly. Flodén (2013); Lunell (2011); Martin (2017) state that people's experiences are dominated by the user interface, as it is the outermost layer in the interaction. Hence, it is of importance that what is offered in the digital servicescape and user interface meets the expectations of the target group, which in this case consists of young elderly.

To sum up section 4.3, Information systems:

- It is important to consider all parts in the DWS ecosystem.
- Servicescape for DWS, program and context model, are crucial for the prosperity of the DWS.
- Interaction has a vital role in achieving a successful DWS.

After presenting the findings and discussing the results, a summary of this chapter follows.

4.4. Summary

This thesis presents issues to consider on how to enhance young elderly's use of DWSs when developing and providing proactive digital wellness programs. For the young elderly efficient servicescapes for DWSs provided in tailored DWSs can increase their chances of living longer and healthier lives with a higher level of wellbeing. To achieve this there is a need for greater understanding about what affects their motivation to benefit from the DWSs offered. In addition, it is of interest how young elderly, developers, and providers interact in an ecosystem. This is because they all play a significant role and depend on each other to succeed. The three main

stakeholders have different motives for their interest in DWSs and its servicescape. For the young elderly an efficient DWS can enhance their potential for wellness and thereby a longer, healthier, and fulfilling life. For the developers and providers the young elderly constitute a large market where opportunities for profit are considerable.

For developers and providers, it is of importance to consider that the young elderly consist of a large group of individuals who share the fact that they were born well before the advent of digitalisation. This affects the young elderly's readiness and willingness to benefit from what is offered in DWSs. However, although they can be regarded as digital immigrants, they are also individuals whose knowledge of and interest in what is offered in DWSs may vary. In some cases, some of them may even be considered as naturalised digitals. Therefore, it is important to consider what requirements would motivate the young elderly to benefit from DWSs. In this context, the servicescape for DWS program can make a significant contribution.

When developers and providers aim at the young elderly, it is important to consider the four wellness dimensions. This, since the four dimensions, physical, social, intellectual, and emotional wellness, together constitute a holistic approach to what is essential for young elderly's wellness. Servicescapes for DWSs provided in sufficient DWSs can facilitate and encourage physical, social, intellectual, and emotional activities and provide feedback on what physical and intellectual training activities are generated in terms of pulse, heart rate, and sleep. Concerning social and emotional wellness dimensions, DWSs can facilitate and encourage listening to music, enjoying a book, and social interaction and thereby contribute to wellness. Altogether, the four wellness dimensions constitute cornerstones for enhancing and expanding the young elderly's potential for wellness.

In this part, the findings have been in focus and in the next chapter; the conclusions of the thesis will be drawn.

5. Conclusions

"Till havs"
- Jussi Björling -

In this the final chapter, the conclusions are presented offering insights that can help us set sail and go "till havs" [to sea] in search of a better understanding of how to build a servicescape for DWSs to enable young elderly to increase their chances of a longer, healthier and happier life. DWSs for large groups of young elderly will require an ecosystem to develop, distribute, maintain, support, and further develop the DWSs. Servicescapes for DWSs will offer services that are efficient as well as easy to access and use. The challenge of enabling, sustaining and further developing the use of DWSs to promote good health lies behind the research question: How can a digital servicescape enhance young elderly's use of Digital Wellness Services (DWSs)? Finally, this chapter presents implications for practice and further research.

Based on my parents' and relatives of my friends' struggle with digital devices gave me an insight into how seniors feel about this situation and this impression led to my first thoughts on this research area. First in this chapter I will answer the research question, then offer an evaluation of research goal, and finally present implications for practise and further research.

5.1. Answers to the research question

This section first presents short answers to the research question and the focused research questions. Thereafter, the three main stakeholders, developers, providers, and young elderly are covered based on the research questions. Finally, a win-win-win situation is highlighted.
The research question in this thesis is:

How can a digital servicescape enhance young elderly's use of Digital Wellness Services (DWSs)?

The answer is that digital servicescape can enhance DWSs by:

- Meeting the preferences of the young elderly (cf. 4.1).
- Provide an opportunity for interaction and co-creation (e.g. between developers and young elderly, provider and young elderly, and among the young elderly) (cf. 4.1 and 4.2).
- Visualising and communicating service offers (cf. 4.2).
- Providing support for the use of DWSs (cf. 4.3).

- Providing trust, credibility, and guidance (cf. 4.1, 4.2, and 4.3).

The focused research questions are:

- *How can a DWSs ecosystem with a digital servicescape be described?*
- *Which stakeholders are involved in a digital servicescape?*
- *What are the key elements of a model of a digital servicescape?*
- *How can a program for digital servicescape be formed?*
- *Who can benefit from DWSs?*

Answers to the focused research questions are presented below.

- *How can a DWSs ecosystem with a digital servicescape be described?*

- The DWS ecosystem (figure 27) consists of context, technology, stakeholders, and use and results. Digital servicescapes are described in context and technology. The ecosystem describes the whole and the parts of an IS. Furthermore, it points out why and how the parts are important and tries to show how they provide values and benefits to stakeholders (cf. 4.3).

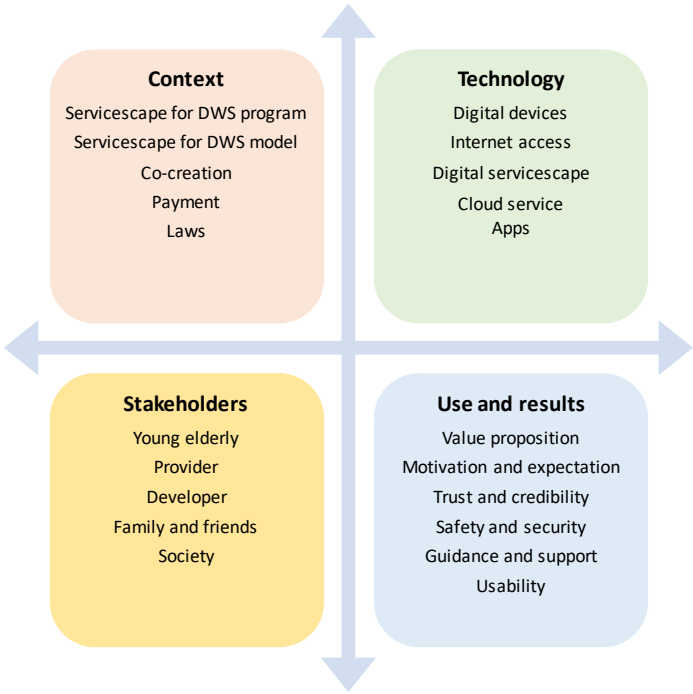


Figure 27. Examples of content in a DWS ecosystem (4.3)

- *Which stakeholders are involved in a digital servicescape?*
- The young elderly, providers, and developers constitute the three main stakeholders. In addition, there are also family, friends, and society (cf. 4.2).

- *What are the key elements of a model of a digital servicescape?*
- The model (figure 28) starts with developer and provider and results in young elderly's wellness. In between are DWSs, servicescape, servicescape for DWSs, and young elderly's use of DWSs (5.1.1, 5.1.2, and 5.1.3) (cf. 4.1).

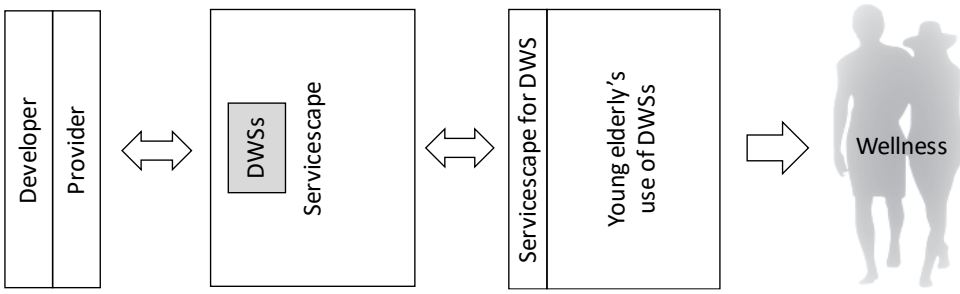


Figure 28. Servicescape for DWS context model (4.1)

- *How can a program for digital servicescape be formed?*
- The program (figure 29) must be formulated differently regarding the three main stakeholders (5.1.1, 5.1.2, and 5.1.3). For the developers it is about creating, designing, implementing, and maintaining. For providers it is about motivating, offering, and highlighting value and benefits. For young elderly it is about choosing, daring, finding, and expressing their needs and demands clearly (cf. 4.1).

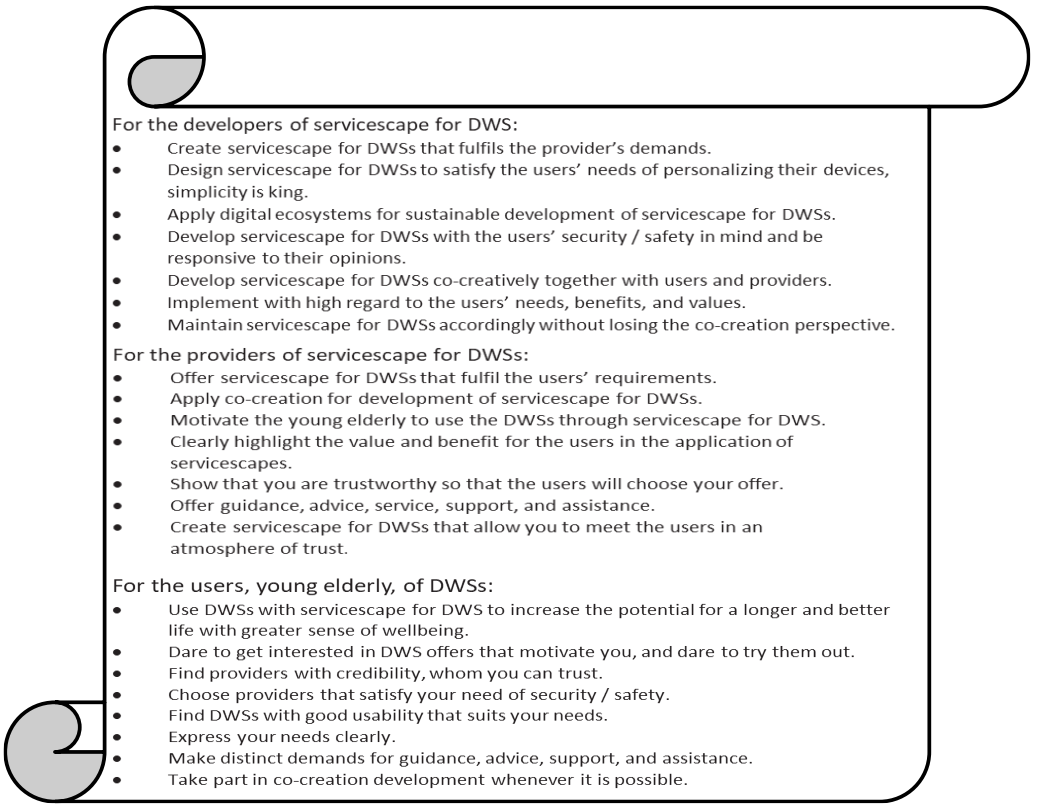


Figure 29. Servicescape for DWS program (4.1)

- *Who can benefit from DWSs?*
- There are three groups that benefit most. They are: i) young elderly, including family and friends, ii) developers of DWSs, and iii) providers of DWSs (cf. 4.2).
- The five focused research questions are interconnected. Stakeholders, in this case young elderly, provider, and developer (second question) are included in stakeholders (lower left square) in the ecosystem (first question) (cf. 4.3 and figure 27). They are also an element in the model (third question), part of the program (fourth question), and receive benefits (fifth question). Parts of model (third question) and the program (fourth question) are a part of context (upper left square) in the ecosystem (first question). Parts of program are part of technology (upper right square) and are present in the ecosystem (first question). Parts of model (third question) and program (fourth question) are represented in use and results (lower right square) in the ecosystem (first question). Model (third question) and program (fourth question) are connected to context (upper left square) in

the ecosystem (first question). Part of program (fourth question) is connected to benefit (fifth question).

When developing and maintaining a DWS a digital servicescape for DWSs should be built in so that benefits can be achieved (cf. 4.2.2 and 4.3). Examples of benefits are: i) increased customer satisfaction, ii) increased sales, iii) added value to goods and services, and iv) information exchange between customer, provider, and developers.

5.1.1. Developer of digital wellness services and servicescapes

The developer, as well as the provider, constitute two of the three major stakeholders in the digital ecosystem (cf. 4.2 and 4.3). They together are the stakeholders who are responsible for developing and providing DWSs and its servicescape (cf. 4.1). The developer's place in the DWS ecosystem can be described by a model (figure 30) showing each stakeholder's place in the system where the developer's role is to create and develop DWSs with its servicescape. However, the image shows an overall view since reality is more complex in that the developer can consist of several companies and can also involve the provider as well as co-creation with the young elderly.

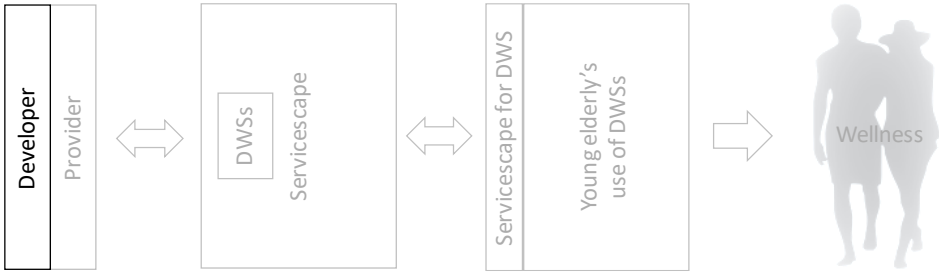


Figure 30. Servicescape for DWS context model, with focus on the developer

The discussion of servicescape and digital servicescape has highlighted some differences (cf. 4.1). Although P3 shows that it in a digital servicescape it is possible to affect all human senses but it is not as obvious that the communication will be interpreted as intended. This is because it is possible to give an impression by for instance using a picture or/and a text of something (e.g. a steamy cup of coffee) in a digital servicescape, but therefore it is not fully possible for people to perceive what the actually coffee smells and tastes like (cf. figures 10 to 19). This is a limitation in the digital servicescape in comparison with a physical servicescape and this must be taken into account in the communication with a target group such as the young elderly (cf. 4.3).

Figure 31 summarises what developers should consider when developing DWSs tailored for young elderly (cf. 4.1).

For the developers of servicescape for DWS:

- Create servicescape for DWSs that fulfils the provider's demands.
- Design servicescape for DWSs to satisfy the users' needs of personalizing their devices, simplicity is king.
- Apply digital ecosystems for sustainable development of servicescape for DWSs.
- Develop servicescape for DWSs with the users' security / safety in mind and be responsive to their opinions.
- Develop servicescape for DWSs co-creatively together with users and providers.
- Implement with high regard to the users' needs, benefits, and values.
- Maintain servicescape for DWSs accordingly without losing the co-creation perspective.

Figure 31. For the developers of DWSs

In conclusion the developer must: i) meet the expectations and demands of the young elderly and therefore create relevant services, ii) the developer has to build trust and credibility in the services they develop, and iii) the developer has to take into account the option of co-creation with the young elderly.

5.1.2. Provider of digital wellness services and servicescape

The provider in the digital ecosystem is in the frontline, offering the developers' products and services to customers and prospects. This means that the provider is an intermediary between the developer and the customer and at the same time a marketer. This means that the provider interacts with both the developer and the target group for the DWSs offered, in this case young elderly (figure 32). In addition, the servicescape where the providers and young elderly meet and interact can describe the relation between the parties. The interaction opens the window for co-creation and co-operation where the young elderly can contribute with important feedback so that the offerings can meet their needs and requirements (cf. 4.1 and 4.3).

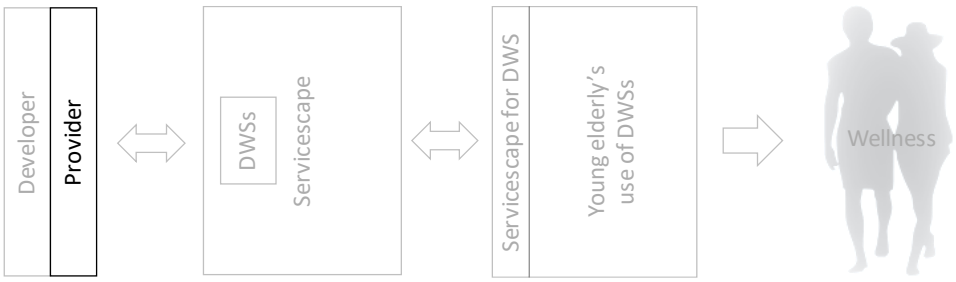


Figure 32. Servicescape for DWS context model, with focus on the provider

For the providers it is of importance that the DWSs offered attract the young elderly, as they will otherwise reject the offer. Figure 33 proposes

what providers should consider when offering DWSs to young elderly (cf. 4.1).

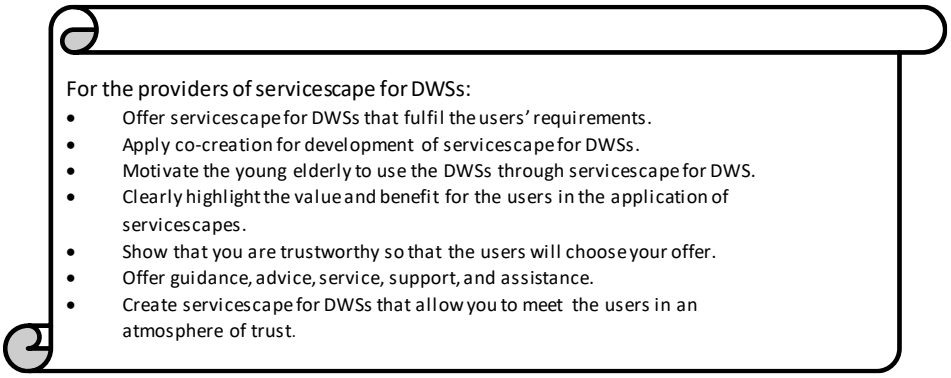


Figure 33. For the providers of DWSs

In conclusion, the provider's offer must: i) meet the requirements of the young elderly and therefore be of interest to them, ii) motivate the young elderly to awaken their interest in what is offered, iii) build trust and credibility, and iv) take into account that the usability of the interface must meet the demands of the young elderly, and thereby offer guidance and assistance, as well as allow co-creation (cf.4.1 and 4.3).

5.1.3. Young elderly and the use of DWS

The demands and requirements of the young elderly as prospects and customers of DWSs are of great importance (cf. 4.1). DWSs can provide them with tools to achieve a longer, healthier, and more satisfying life. Figure 34 shows the young elderly as users of DWSs. The young elderly can benefit from what the developers and the providers offer. If the developers succeed in developing DWSs that the providers can market in a way that motivates the young elderly to benefit from the services offered it can generate a profit for the developer and the provider, as well as benefit the young elderly. However, as this thesis has shown, the servicescape plays a crucial part as it is where the offer meets the young elderly and it is in that environment where the interaction occurs. As a target group they constitute a significant market, including many who are relatively affluent, thus making them interesting as customers to providers and developers (cf. 4.2). However, the young elderly have to be motivated to be interested in the offer, and they have to feel trust and credibility in the provider of the offer as well in the offer itself. The design of the DWS and its servicescape have to meet their demands and the usability of the interface has to be coherent with their requirements (cf. figures 16 to 19). For the young elderly the physical servicescape, such as a grocery store, was the place where they have always made their purchases. The digital servicescape is

something that has entered their lives in the last two decades and is available in their digital devices wherever they may be (cf. figure 15). Hence, it is important that the DWSs attract them and gain their trust in order to win their loyalty (cf. 4.1 and 4.2).

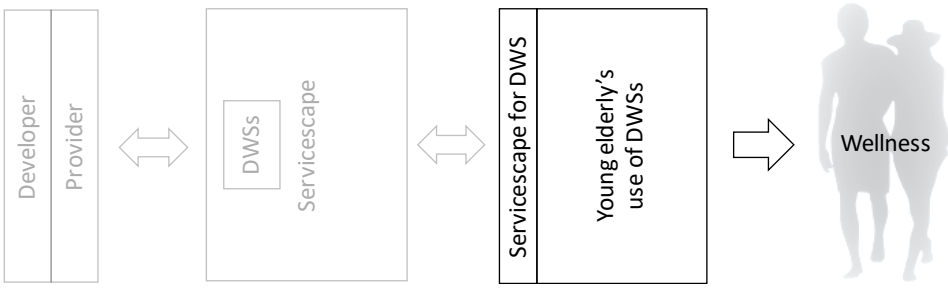


Figure 34. Servicescape for DWS context model, with focus on young elderly's use of DWSs

Among the young elderly, there is a reluctance to try new offers and if they are not motivated, they will not be interested in the offer and therefore reject it (cf. 4.2.2). This means that first of all they have to be motivated and secondly the offer has to be in their interest and if it not, it does not matter how well the servicescape for DWS and the DWSs are designed and what the service provider. Therefore, it is crucial to design the digital servicescape in a way that attracts and suits the target. However, a well-designed DWS offer in coherence with the demands of young elderly is not enough. Hence, it is vital that the service developer and provider meet the young elderly in their need for trust. This means that credibility is a crucial factor. First to capture their attention and interest and then to induce them to try the offer to finally win them as loyal customers. This thesis (cf. 4.2.1) finds that the young elderly are more open to accept and adapt to offers from companies and organisations they already are familiar with and to those with whom they already have a relation.

This thesis has shown that the young elderly use the Internet for a range of activities (e.g. communication, ticket reservation, banking, reading news, and search for information) (cf. 4.2.1). This implies that they are open minded when it comes to using the services offered on the Internet. However, people in general, including young elderly, only spend a few seconds to decide whether an offer is attractive enough to click further. Furthermore, if the interface is not sufficiently attractive they will leave the site immediately. This provides a picture of under what circumstances companies offering DWSs have to work. In addition, the young elderly prefer a user interface that is clear and not crowded with options. They appreciate if there is guidance and the option to customise the interface according to their needs and requirements (cf. 4.2.1).

The young elderly need to be motivated to adapt to services offered. Therefore, the providers have to meet the expectations, needs, and demands of the young elderly and develop services that are suited for the

target group (cf. 4.2.2). However, this is not enough, as this thesis shows that the young elderly want to be in a context where they feel safe and therefore the provider must create a credible and trustworthy profile. In addition, the provider has to meet the young elderly's demand for guidance and customisation. This is in line with the demand that providers have to develop interfaces that are easy to understand and manage. Therefore, co-creation can provide an interesting method for developers and providers to gain a better understanding of the target group and thus succeed in developing offers that are of interest to young elderly. However, finally it is up to the young elderly to consider, determine, and express what is important to them. Figure 35 proposes issues for young elderly to take into account when considering for DWSs (cf. 4.1).

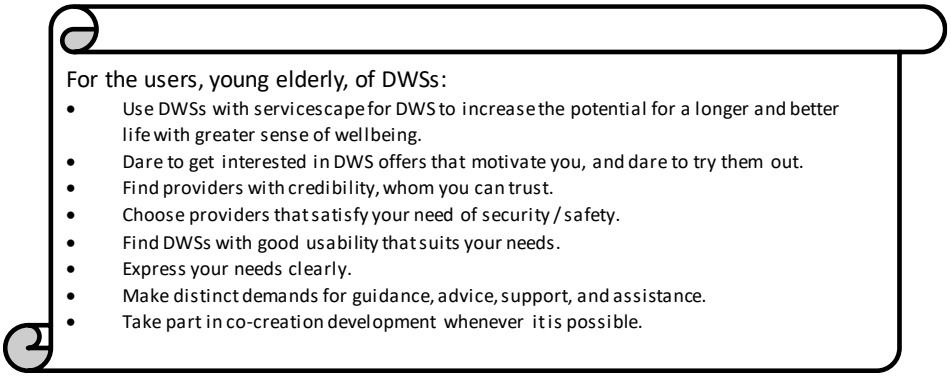


Figure 35. For the users, young elderly, of DWSs

In conclusion the young elderly should consider: i) using DWSs to gain more wellness, ii) being open minded to what DWSs can offer, iii) choosing providers who offer trust, credibility, and security, iv) looking for a servicescape and DWS that provides good usability, options for guidance and assistance, as well as openness for co-creation, and finally v) clearly express needs (cf.4.1).

5.1.4. A win-win-win situation

So far, the young elderly together with developers and providers have been in focus (cf. 4.1, 4.2, and 4.3). However, well-working and well-designed DWSs and related servicescape can create a win-win-win situation. The first of the three-win situations is about the young elderly who can benefit from DWSs by increasing their chances of a longer, healthier, and happier life and thereby achieving wellness. The second win situation concerns the developers and providers who can make a profit by succeeding in designing attractive DWSs aimed at the young elderly. Finally, the third win situation is about family, friends, and society. For family and friends well-designed DWSs can be beneficial since they help the young elderly to

achieve wellness and thereby require less support from family and friends. For society in general, there are financial benefits, as healthier and happier young elderly who can achieve wellness will reduce the demand for health care and support. Together the three win-win-win stakeholders constitute an opportunity for a better tomorrow for all concerned (cf. 4.2).

5.2. A critical evaluation of the purpose and research goal

The purpose and research goal was to address the question: *How to design a digital servicescape for DWSs for young elderly so that its usability meets the young elderly's needs and demands?* This is in the context of making it possible for them to benefit from DWSs that offer wellness services aimed at enabling a long, healthy, and eventful life. In addition, this work offers providers and developers insights into what should be considered to enable the young elderly to benefit from DWSs offered (as shown in 5.1, 5.1.1, and 5.1.2).

In conclusion, it can be highlighted that the research goal has been attained, as it was found that: i) DWSs and their servicescapes have to meet the needs and demands of the young elderly and this must therefore be understood and fulfilled by developers and providers, and ii) in order to succeed in providing DWSs to young elderly, developers and providers must take into account aspects of motivation, context, trust, credibility, guidance, and usability (cf. 41, 4.2, and 4.3).

In order to answer the purpose and research goal, it is vital to emphasise the importance of understanding and meeting the needs and demands of the young elderly when designing DWSs and servicescapes. If the DWS developers and providers cannot accomplish this, there is a risk that they will face reluctance and even rejection from the young elderly. Therefore, DWSs and servicescapes for DWSs have to be designed in cooperation with the young elderly and one way to accomplish this is to co-create. This co-creation process with the young elderly not only offers new insights but is also a way to satisfy the young elderly's need for developing a relationship of trust.

This thesis has shown that credibility and trust are very central to the young elderly (cf. 4.2.1). This means that the provider must gain the trust of the young elderly. Research indicated that the young elderly were more willing to adopt digital services from some sectors more than others as in the case of online banking. As the young elderly seem to have little or no hesitation in using what is offered it would be wise to use this knowledge and experience as a basis for the further development of DWSs. This is also in line with the demand for usability which research indicated as an important aspect for attracting the young elderly as customers. A further aspect, which is connected to usability, deals with guidance. The young elderly mentioned that they appreciate guidance in how to operate the

interface as well as options for personalisation. However, there still has to be a motive for the young elderly to participate. Although the target group does not participate in development, it is important that they feel that what is offered is set in a context that suits them and awakens their interest. Altogether, the answers to the research questions and the purpose and research goal point towards what to consider when developing and providing DWSs and its servicescape for young elderly.

In this, the last chapter, conclusions have been presented. However, there is still time to look into the crystal ball. On basis of the conclusions, some implications for practice and further research will be proposed next.

5.3. Implications for practice and further research

Based on the findings of this thesis, there are some implications for practice and further research to highlight and discuss. The foundation for further research lies in testing and developing servicescape for DWS (figure 36).

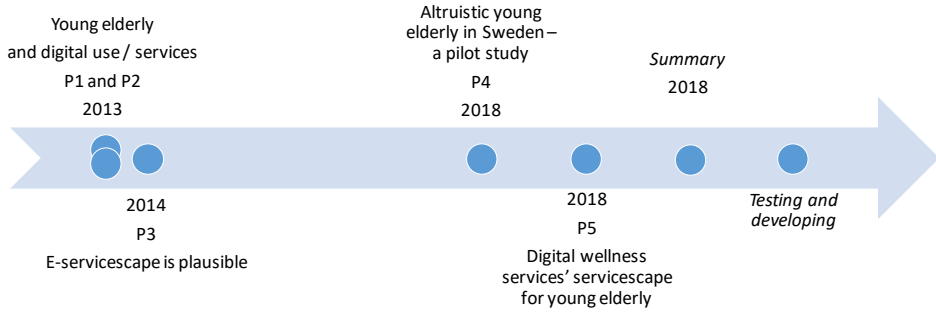


Figure 36. The journey and future of servicescape for DWS

This thesis has created a foundation for continued research, testing, and development of DWSs and its servicescape. The future steps should include, but are not limited to:

First of all, there is a need to develop a deeper understanding of the benefits a well-designed servicescape for DWS can bring to people in general and to the group of young elderly in particular as most people sooner or later will be among the group of young elderly.

Secondly, there is need to put research efforts into the group older than the young elderly of today (senior group) as it: i) can be beneficiary to the group, ii) it can be beneficiary to those who will reach a higher age in the future, and iii) it can be beneficiary to family, friends, and society.

Thirdly, there is an implication for investing in this research if it could lead to a win-win-win situation when young elderly are provided with digital wellness devices. If so, how should this be constructed? Should the

society provide devices for free, with discount, or with some other solution?

To achieve this, the following must be carried out:

- ✓ Developing, launching, and testing DWSs for young elderly.
- ✓ Perform sufficient field tests with hundreds of young elderly to verify functionality and validation of DWSs and their servicescape.
- ✓ Test the acceptance and adoption of the DWSs.
- ✓ Work out DWSs and their servicescapes and test the functionality, completeness, scalability to thousands of users, and adaptability to digital devices such as wearables and smartphones.
- ✓ Develop the digital ecosystem so that it is sufficient to ensure a win-win-win situation for the stakeholders.

The development in commercial channels over the last few years shows an ongoing change in describing and defining these phenomena. It all began with commerce, then e-commerce was developed when the Internet emerged. Thereafter, smartphones and tablets entered the market and a new channel of m-commerce occurred. In conjunction with the development of more than one channel a need for a multi-channel approach developed. The last step points out an approach where the channel must look the same for the customer regardless where the customer consumes, now labelled as omni-channels. Now the concept of commerce covers all labels and we have thus come full circle. This points to a holistic approach to servicescape where the customer is in focus and not the channel. After a full circle, we are back to servicescape. I will follow the development with interest.

Finally, to achieve a win-win-win situation, some thoughtful words of Tage Danielsson, a Swedish author, entertainer, and much more, come to mind for future work. "*If you refuse to look back and do not dare to look forward, then you have to look out*!"

To summarise my feeling for this journey I use in my own way the words of the first man on the moon, Neil Armstrong – a small step for mankind, but a giant leap for me!

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Hans Allmér

Servicescape for Digital Wellness Services for Young Elderly

This thesis focuses on digital wellness services (DWSs), services provided through digital devices by using digital environments. DWSs develop information for users that affects their wellness. The focus group for our work on DWSs is the age group "young elderly" (60 – 75 years) that, as a group, form a very large market consisting of almost 100 million people in Europe alone.

An explorative approach was applied and the data was collected through surveys, literature review, and focus groups after which it was sorted, analysed and interpreted. The thesis works out a framework for digital servicescapes that makes it possible for young elderly to benefit from DWSs. Digital servicescapes build a context for producing and offering DWSs through interaction of service providers and service users. DWSs for large groups of young elderly require an ecosystem of stakeholders to develop, distribute, maintain, support, and further develop the services. An ecosystem builds on policies, strategies, processes, information, technologies, applications and stakeholders, and includes people who build, sell, manage and use the system. A digital servicescape offers a basis for the ecosystem to form, evolve, and survive, and produces platforms on which it is easy, effective, and productive to access and use DWSs.

Efficient and well-designed DWSs and their servicescapes can create a win-win-win situation that includes: (i) the young elderly, who benefit from DWSs by increasing their chances of wellness, (ii) the service developers and providers, who can build a business through well-working DWSs aimed at the young elderly, (iii) family and friends, as the young elderly require less support, and (iv) for society in general there are financial benefits, due to less demand for health care and support. Together the three win-win-win scenarios build an opportunity for a better tomorrow for a society with a growing elderly population.

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